

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- ☐ Coloured covers/
Couverture de couleur
- ☐ Covers damaged/
Couverture endommagée
- ☐ Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- ☐ Cover title missing/
Le titre de couverture manque
- ☐ Coloured maps/
Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- ☐ Bound with other material/
Relié avec d'autres documents
- ☐ Tight binding may cause shadows or distortion
along interior margin/
La reliure serrée peut causer de l'ombre ou de la
distorsion le long de la marge intérieure
- ☐ Blank leaves added during restoration may appear
within the text. Whenever possible, these have
been omitted from filming/
Il se peut que certaines pages blanches ajoutées
lors d'une restauration apparaissent dans le texte,
mais, lorsque cela était possible, ces pages n'ont
pas été filmées.

- ☐ Coloured pages/
Pages de couleur
- ☐ Pages damaged/
Pages endommagées
- ☐ Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- ☒ Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- ☒ Pages detached/
Pages détachées
- ☒ Showthrough/
Transparence
- ☐ Quality of print varies/
Qualité inégale de l'impression
- ☐ Continuous pagination/
Pagination continue
- ☒ Includes index(es)/
Comprend un (des) index

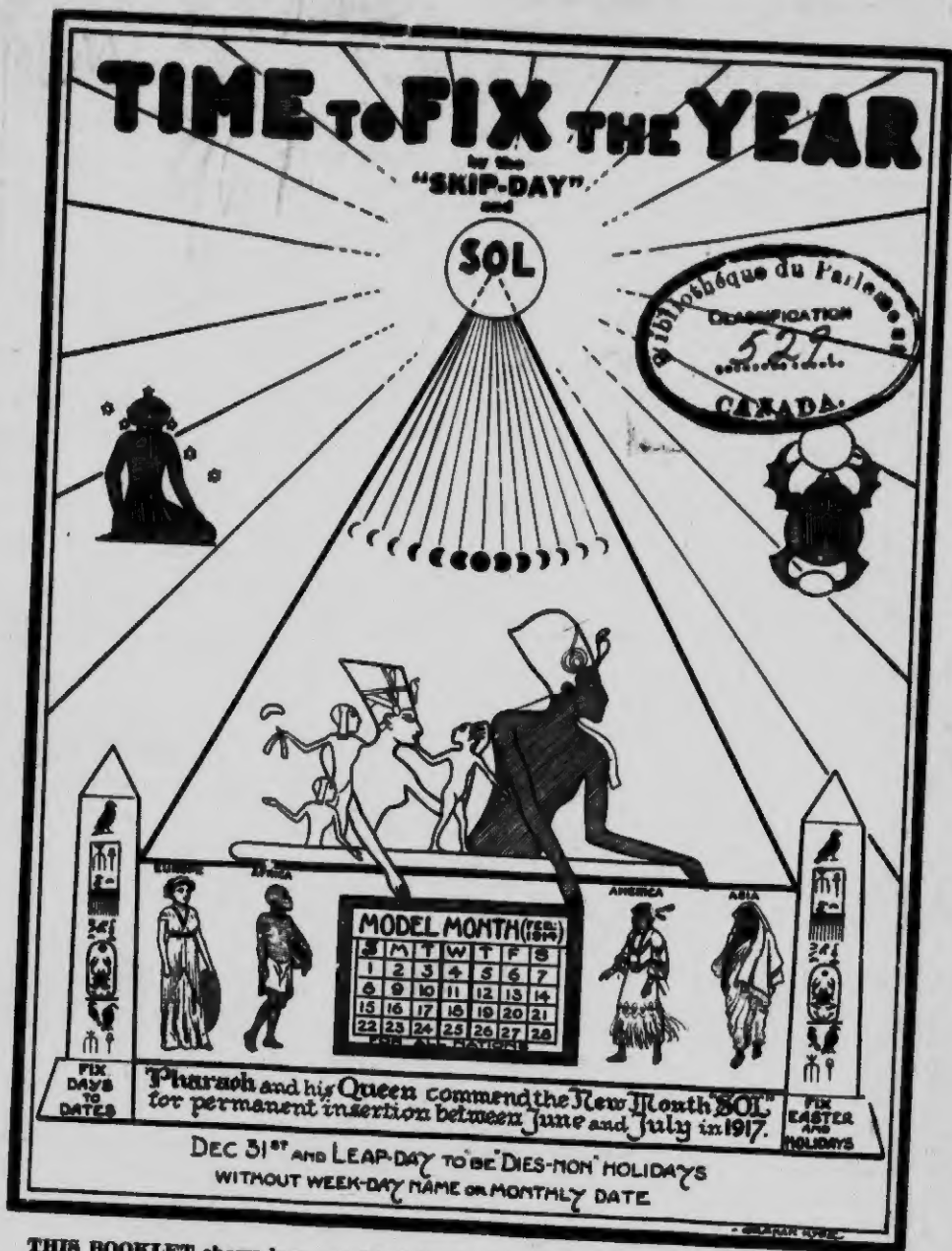
Title on header taken from: /
Le titre de l'en-tête provient:

- ☐ Title page of issue/
Page de titre de la livraison
- ☐ Caption of issue/
Titre de départ de la livraison
- ☐ Masthead/
Générique (périodiques) de la livraison

- ☐ Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
								<input checked="" type="checkbox"/>			



THIS BOOKLET shows how mankind developed our Almanak Register of the Yearly returning Seasons, to ensure renewals of food supplies and mutual convenience. Also how we can avoid the inconveniences caused by needless changes of week-day names for recurring dates throughout each month and year, and best improve them by permanently using the easiest month of four complete weeks, and denoting as duplicate Saturday holidays the 365th day (suggested as "Skip-day") and in leap years "Leap-day"—to be appended to the Standard 28-day month, as readily as the 29th of February is inserted in Leap-Years, as "Leap-Day." You will benefit thereby daily after the International Conference's draft of the needed Legislative Act becomes law. This is published to facilitate the assemblage and work of that World-wide Conference.

With 200 Illustrations and Exhibits. Copyrighted by M. E. Cotworth, 1914, in the British Empire and U. S. A.

Published by the INTERNATIONAL ALMANAK REFORM LEAGUE

Hon. President: Sir Sanford Fleming, K.C.M.G.

Secretary-Treasurer: M. E. Cotworth

For short, address:—J. A. R. L., New Westminster, B. C., Canada

Will you please help to bear this World-wide Expense of Calendar Reform and advocate it?

1914

Plate A—The Length of the Year first sought by the Sphinx Method, was found by the Pyramid-Builders who later developed "Father Time" is Re-gearing the Year to record 13 equal Months of 4 Weeks at his original "year works," the Sphinx and Great Pyramid, in Egypt, where the basis of the Calendar and World's Time were evolved, as the most useful knowledge.

Knowing that humanity needs an equal monthly measure of 4 complete weeks, and realizing the many advantages obtainable by permanently using February, 1914, as the much-needed "standard month"; "Father Time" is so impressed by the needed facilities derivable from the use of the four-week watch dial crowning the Sphinx, and the concise "Yearal" tablet leaning on her breast—that he is convinced that the calendar cycle of the year can very easily be recast to circle constant week-day names, as dialled, to repeat on those fixed dates throughout every month and year for all future time.

The Zodiacal record of passing Seasons is the best means by which the mightiest efforts of mankind have established permanent prosperity for all nations. It required the strenuous labors of multitudes of Egyptians during thousands of years to derive that final pyramid slope by which the 365 day sectors of that Celestial circle were precisely registered to tally the yearly progress of the sun around the star-studded sky. The apex of that slope was designed both to register its pointed noon-shadow's length along the meridian-line on the floor below, and point the sight of the trained pyramid astronomer to both the mid-day sun and midnight stars, from the observation passage located below where the artist has indicated the axis of that circle which surrounds the earth as the path of the Ecliptic. The Arris-ridges, from corners to Apex, served as fixed sighting angles to measure that 360° time-wheel into 30° signs of Zodiac for 12 equal months. A 13th is suggested as "bel."



The 3 Arris-sighting-lines projected above the Apex spanned the 30° nightly moves of the Star-Zodiac each mon

NATIONAL LIBRARY
CANADA
BIBLIOTHÈQUE NATIONALE

THE FIXED "YEARAL"

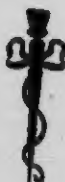
Proposed to Replace Changing ALMANAKS and CALENDARS

Prefaced by Illustrations and Notes showing their Evolution

By MOSES B. COTSWORTH, F.G.S.

New Westminster, B. C., Canada
(Formerly of York, England)

Author of the "Rational Almanak"
"Railway Maximum Rate and Charges"
the "Direct Calculators"
and other publications.



N.B.—The INTERNATIONAL CONGRESS OF CHAMBERS OF COMMERCE has UNANIMOUSLY REQUESTED the GOVERNMENTS of ALL NATIONS to CONVOKE a Diplomatic OFFICIAL CONFERENCE to ESTABLISH a FIXED INTERNATIONAL CALENDAR.

The ROYAL SOCIETY OF CANADA unanimously resolved: "That Mr. M. B. Cotsworth's proposal for the Reform of the Calendar receive the endorsement of the Society."

The GOVERNMENT OF CANADA (petitioned by the Royal Society) has REQUESTED the BRITISH GOVERNMENT TO ASSEMBLE THE NEEDFUL INTERNATIONAL CONFERENCE AT AN EARLY DATE.

President Hadley, of Yale University, U.S.A., approving these proposals in 1903, stated:

"This reform with its month of four weeks will surely come, as it is a commercial necessity."

Sir Sandford Fleming, the veteran simplifier of our daily Time (who originated "Standard Time" adjustments by complete hours, as now used by all nations), recorded the most experienced opinion when recommending this reform to the Royal Society of Canada by the words:

"That such a needed change can be effected, I have no doubt whatever."

THE AMERICAN CONFERENCE MAY MEET AT PANAMA

h mon
the axis-rod, from corners to Apex, served as fixed sighting angles to measure that 360° time-wheel into 30° signs of Zodiac for 12 equal months. A 13th is suggested as "Sol." The Sphinx was earlier used to crudely measure the year by tracing the seasonal points of sunrise (observed across the Nile) from behind the amplitude-directing rays of its wing.

CK43

C8

1914

C.3

WASINGTON 2025 NOV 19 1914
 484443
 2025 NOV 19 1914

The PROPOSED "INTERNATIONAL FIXED CALENDAR" or "YEARAL"

EDITOR'S NOTE.—Readers of former articles by Mr. Cotsworth which have appeared in the *British Columbia Magazine* must have been impressed by the long years of arduous research which he has devoted to studying the origin and methods of almanak-making in many countries. The outcome of the expenditure of his time and money is a scheme to abolish our present clumsy calendar, with its unequal months and changing day names—the undoubted source of loss and worry to every civilized person. The average man does not realize to what extent the present system retards him in both his business and home life. It is a system that was arbitrarily set up 1940 years ago, warped by the pride and arrogance of Roman rulers.

The task of altering the daily customs of so many millions of people of diverse nationalities in relation to their use of calendars is so stupendous that only a man of strong personality, infinite patience, and absolute unselfishness would contemplate it. It may seem premature at the present moment to felicitate Mr. Cotsworth on what he has done, but having been privileged to gather some knowledge of his work and the almost unimaginable difficulties he has surmounted we cannot let the opportunity pass, and we place upon record the fact that *British Columbia* is most fortunate in being able to claim Mr. Cotsworth as a citizen today, although he began his labors originally in the historic city of York, England. If the international conference of the representatives of the Great Powers, which will meet in the near future as a direct result of his labors, adopts his suggestions, they will benefit us all every day by facilitating business and social convenience.

He undoubtedly is the originator of the "*Dies-non*" system, by which the "odd (365th) day" is proposed to be appended as an "extra Saturday" in every year and is to be freed from week-day name to avoid the present avoidable trouble all calendars now make by yearly changing week-day names and monthly dates throughout all the 365 days of all years—as calendar constructors during more than 2,000 years had unsuccessfully striven to avoid.

Upon that discovery, by Mr. Cotsworth in the year 1895, has been founded all the slightly varied proposals since suggested by calendar reformers in all the great nations of the world whose governments are welcoming Mr. Cotsworth's proposals to establish the *International* year of fixed week-day names for the 364 days each year, and separate the 365th day as the helpful holiday universally needed at the year's end.

Readers will readily grasp his idea, which like all true and lasting reforms is very simple.

Dec. 31st, or the "Shortest Day" ending nature's year, is proposed as a "Dies-non" to be separated from both week-day names and monthly dates. The fifty-two weeks in all the years following 1918 can then easily be divided into thirteen months of four weeks each, like February. The proposed new month can be permanently inserted between June and July, just as easily as the 29th February was inserted as Leap-day between February and March, 1912.

That *FIXED* dates should be located for Easter and all Festivals, National Holidays, Fairs, &c., was also proposed by Mr. Cotsworth in the year 1895, to relieve all nations from the losses caused by early Easters and the tiresome drifting periods now used for legislative, university, college, school and law terms, which would be far better *FIXED* to avoid the proclamations and inconveniences now caused by that lack of fixity.

He also furnished convincing reasons why the year 1918 is the most convenient time to make these desirable improvements for future years. The chief reason being that the year then ends with the week, and the change can then be most easily made for the convenience of all.

After he invented the "*Dies-non*" method, the difficulty was not to draw up the scheme—to one possessing such complete knowledge of the history and mysteries of almanak-making, that was a congenial task—but to overcome the national, historical and religious prejudices of civilized people all over the world. To benefit every human being every day is a noble task, deserving of all the help we can give. We, therefore, asked Mr. Cotsworth to write this article.

It is also interesting to remember that "standard time," which has been a boon to the whole world, had its inception in Canada thirty years ago through Sir Sandford Fleming, K.C.M.G., who after the fullest consideration has endorsed Mr. Cotsworth's proposals as the simplest and most advantageous of all.

The Royal Society of Canada after careful consideration unanimously commended Mr. Cotsworth's proposals as the best, and petitioned the Government of Canada, who have urged the British Government to assemble an International Conference to consider this timely proposal to abandon our changing calendars and almanaks for one *Fixed "Yearal."*

That is the more appropriate name suggested for the proposed International "Fixed" Almanak which Sir Sandford Fleming reported to the Royal Society, will daily "benefit the great human family throughout all future time."

For the convenience of readers, the connected series of illustrations have been grouped into Fore-plates "B" to "J" preceding the explanatory pages, on which are printed such further pictures as are better interspersed with the type. The End-plates "K" to "W" illustrate the more detailed references to which readers specially interested in such research may refer.

Between the "fore" and "end" plates are printed: 1. Notes re the Evolution of Almanaks and Calendars; 2. The Proposals for Calendar Reform.

References to Encyclopaedias and "Rational Almanak" (as "R. A.") will facilitate verifications.

(PLATE "B.") Ancient EGYPTIAN CALENDAR of TWELVE MONTHS, shown by SIGNS of the ZODIAC

Capri-
corus
(Goat)

Sagi-
tarius
(Archer)

Scorpio
(Scorp-
ion)

Libra
(Balance)

Virgo
(Virgin)

Leo
(Lion)

Aquarius
(Water)

Pisces
(Fishes)

Aries
(Ram)

Taurus
(Bull)

Gemini
(Twins)

Cancer
(Crab)



This reproduction from the Temple at Denderah is similar to others at Esneh and Ed Dayr.

It appears to be the earliest representation of that Ancient Calendar System which the Egyptian Priests kept profoundly secret, and never portrayed, until their degenerate descendants were induced to engrave their Zodiac in this Temple to satisfy their Greek benefactors.

Herodotus, the chief historian of Ancient Greece, records that "The Egyptians were the first to discover the solar year and to portion out its course into twelve parts. They obtained their knowledge from the stars." The great value of their secret knowledge concerning the origin and construction of Calendars probably caused the Egyptian priests to keep from Herodotus the crucial explanation of how their ancient pyramid builders had first discovered the precise length of the year by measuring the daily lengths of the pyramids' noon-shadows during many centuries, as later explained—because that, together with the huge pointing Equinoctial pyramid slope, was essential to enable the Egyptians to locate the 36 "decans" or weeks of 10 days each, into which their year was divided by 36 stars, nearly equidistant, being observed at mid-night passing above the apex of the pyramid, at intervals approximately 10 days apart—as depicted by the 36 boats, or "astronomical houses" shown above with their respective stars over each. Three of those 10-day weeks constituted EACH OF THEIR 12 MONTHS which WERE EQUAL, and with five Festive-days intercalated at the end completed 365 days of each civil year; cycling through the Sothic Period, to preserve secrecy.

The simple but enormously extensive scale of observations the Pyramid Priests had to accomplish before knowledge of the true 365.242 day year was discovered, as the essential basis upon which the Zodiacal System of Star Astronomy was elucidated, is indicated on End-plate "T," where the Fans illustrate in 10° arcs the natural origin of those periods of 10 day ranges of the Sun's noon track among the "Fixed Stars," locating each daily position along the Sun's apparent Ecliptic Path, throughout every season and month of the Year.

PLATE C. The earliest "SPHINX" METHOD of LOCATING the SEASONS of the YEAR
by registering the seasonal "AMPLITUDE POINTS" OF SUNRISE along the horizon.



I. "The Sphinx" viewed from behind, showing the SUN-RISE-DIRECTING-RAY-LINES emphasized on the left side of the wig, directing observation across the Nile Valley, to the daily points of Sunrise throughout the year. See Plate "J."

Those "ray-lines," after probably more than 7,000 years of exposure, were so indistinct on this small-scale photograph that the artist "emphasized" part on the lower back edge of the wig, to indicate the ray-lines spreading from the nape of the neck, like the Japanese sun-rays.



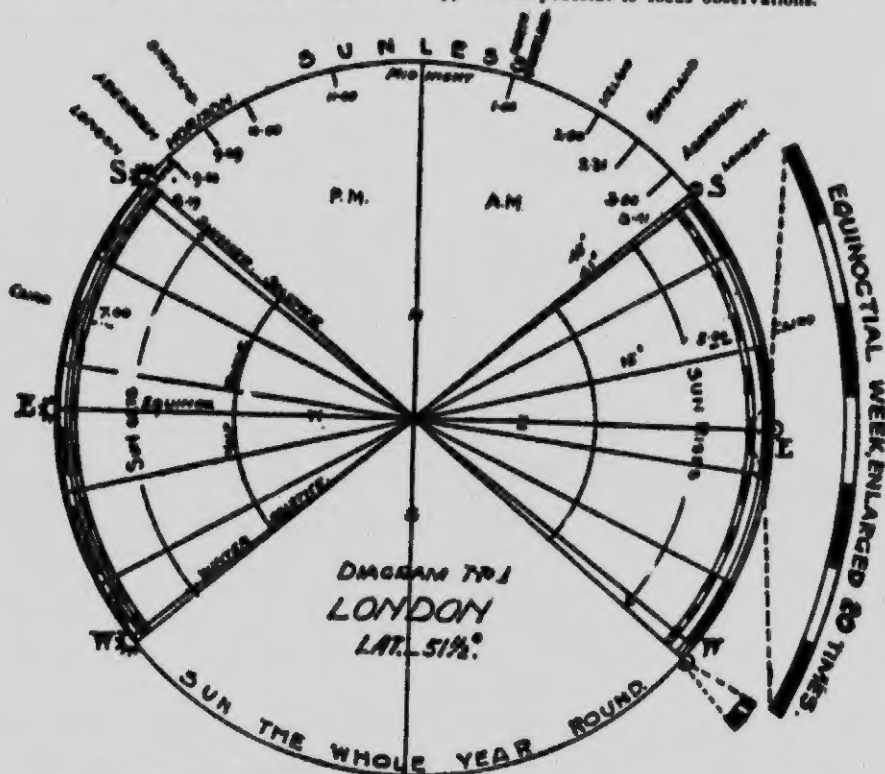
II. "The Sphinx," photographed at Sunrise with the actual Sun "disked" on its head at the "Equinox," when day and night are of equal length. The approximate direction and limited 30° range at Cairo, displayed by the season-marking Sun-rise-points over the distant hills across the Nile, have been painted on the photo as rayed-suns, to indicate the utmost limits of "Amplitude" in Sunrises between the Longest and Shortest Days, when viewed from the same points of observation at the rear of the Sphinx. Those are indicated on Plate "J," where the sacred "Asp" is shown as it originally surmounted the top of the head, so that the Asp's tip served as a "Fixed Pointer" to the center of the Rising-Sun, when the Priestly observers looked from the "rear-points" over the length of the Sphinx to the Sun disked on the Horizon—like the naval gunners sight targets along the "fixed line of sight," from gun rear to fore-points.

For causes that have deflected the Axis of the Sphinx to the North of East, see Plate F. The later star-recording uses of the Front of the Wig and deep Excavations in front, are indicated in the Sphinx section, where an Ancient Egyptian star diagram is reproduced.

(PLATE "D")—The "AMPLITUDE METHOD" used by the "Sun-worshippers" of JAPAN



I. Japanese "TORII Gateway" of the Shinto Temple on Miyajima Island, used like the Sphinx to locate the seasonal points of sunrise, shown on Plate "J," where its mid-rear-point "E" served like the mid-slit beneath the canopy of this pedestal to focus observations.



II. "AMPLITUDE" Diagram contrasting the narrow 30° range at Cairo with the 83° London range of Sunrise and Sunset points along the horizon—represented by the complete circle. W. denotes Winter, Dec. 22nd; E. Equinoxes, March 21st and Sept. 23rd; S. Summer, June 21st.

(PLATE "E")—The "AMPLITUDE METHOD" WAS WORLD-WIDE

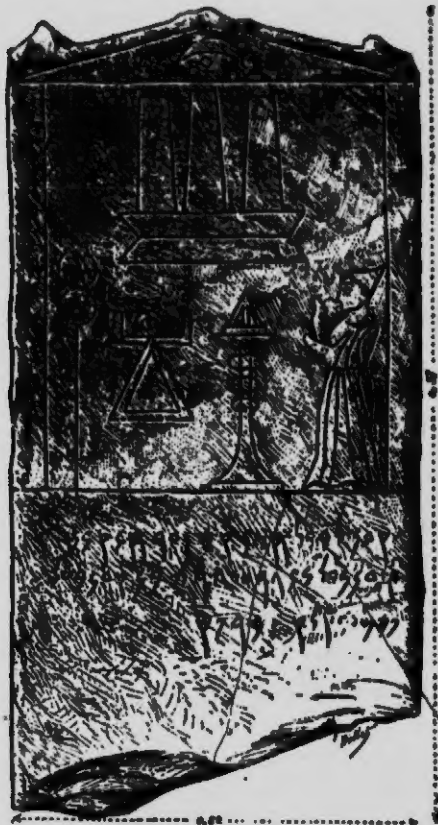


FIG. 232.—Stele from Lilybaeum. *Corpus*, plate 99.

I. This displays the "Amplitude Method" used by the ancient Carthaginians at their stronghold in Sicily. The eye of the Sun is located as peeping over the three monoliths denoting the three seasonal dividing points of Shortest-day, Equal-day-and-night, and Longest-day.

The priest is taking the observations over the fixed point to the Sun "disked" at the Equinox.

Note.—The Sun and Moon "shafted together" on the rod to typify the combined diameters of their disks to form the "degree-unit" or astronomy, measuring 360 degrees round the horizon.



II. Ancient Druidical observatory at Maes-howe, Scotland. Note the three monoliths on promontories to register seasonal amplitudes "sighted" through the "Observation Passage" from the centre of the mound. "Silbury Hill" in Wiltshire contains more than 1,000,000 tons of chalk similarly piled artificially. See R. A. 290 and 342.

N.B.—The "R. A." references indicate where further information is available in the author's book on the "Rational Almanac," first advocating Calendar Reform as epitomized on end leaf.

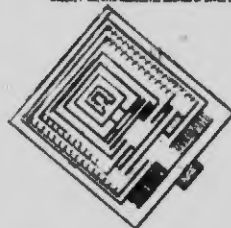


III. The three ancient "Zigurats" of Babylon—repictured as those stepped-towers were ranged.

A LATER CHALDEAN TEMPLE, ON SITE OF THE "SEVEN PLANETS" or DOMAPPELLO MONUMENT, BUILT BY NABONASSAR REAR ABOUT 600 B.C.
From Babylonian Tablets, Plate 100.



FIG. 233.—The three ancient "Zigurats" of Babylon—repictured as those stepped-towers were ranged.



IV. Chaldean Temple, based on the ruins of the supposed "Tower of Babel." The gradual ascent from the southeast contrasts with the steep descent to the northwest needed to register noon, etc., shadows.

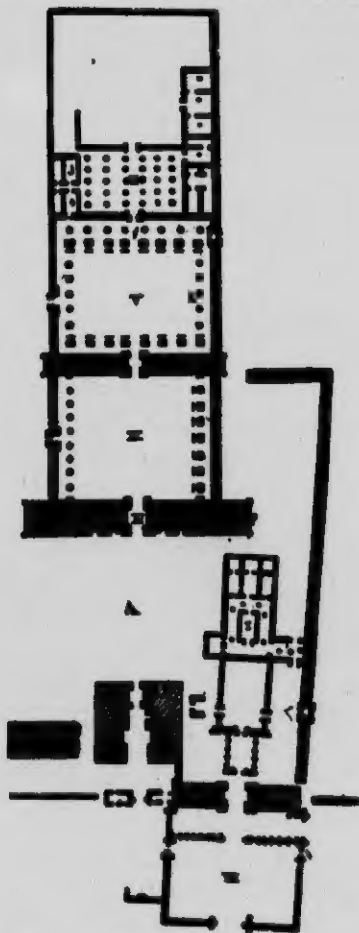
The ground-plan shows its southeast orientation to nature's year-ending on the shortest-day, Dec. 22.



V. The three ancient British "Amplitude Monoliths" near York (England), weighing about 30 tons each. See R. A. p. 10.

Each nation had to devise its own permanent indicators (which were necessarily huge and wide apart) for locating the seasons before refined astronomical instruments or calendars were invented.

I. A Typical Egyptian Temple on the west bank of the Nile, facing the Sun-rise-rays, which enter the lower opening at the front, and pierce through like "spears of fire" (evidenced by the plans below) to the "Holy of Holies" in the rear, where the jewel on the breast-plate of the High-priest shines brilliantly as the sun-beam's shaft of light illuminates it at the Annual Festival—thus mysteriously signifying "the Divine presence" to worshippers in this Temple at Abydos. As the Sun-rise point drifted by the "Precession of the Equinoxes," they had to adjust their Temple as below:



PLAN OF TWO TEMPLES AT MEDINET-
HABU.



How the Date of 1640 B.C. was arrived at by Means of the Shift of the Sun

[illegible]

STONEHENGE OBSERVATIONS, about 2,500 YEARS OLD
are reconstructed by Professor Sir Norman Lockyer

III. The above record of Observation at Sunrise on the "Longest Day" at STONEHENGE evidences both the most complete Druidical system used by the Ancient Britons when measuring the Horizon points of Sunrise and Sunset by the complete circle of monoliths, and their extended method of using distant monoliths and erections to mark the shifting direction of Sunrise and Sunset Sir Norman Lockyer proved to have moved a diameters of the Sun on the Horizon, since Stonehenge was erected.

The same change of alignment caused by the "Precession of the Equinoxes," &c. deflected the axis of the lower Egyptian Temple till the sun's rays failed to reach the "Holy of Holies" at their Annual Festival. Then the worshippers, thinking their Sun-god was forsaking them, had to build a new Temple in the rear, directed to the more recent sun-rise-point on their "Year-day."

Similarly the Priests of almost all religions continued that system of "orientating" their structures for worship to the Sunrise on the Calendar Festival of their patron saint: e.g., churches dedicated to St. George are still orientated to the Sunrise point on April 23rd while others named after St. Peter are pointed to Sunrise on June 29th—St. Peter's Day.

But they were only able to locate the precise dates by the Calendar, as great experience and distant "sighting-pointers" were needed to derive exact dates from the narrow change of daily Sunrise.

(PLATE "G")—Next the MERIDIAN METHOD of TRACING the SEASONS by MEASURING the NOON-SHADOWS of OBELISKS, &c., WAS DEVISED

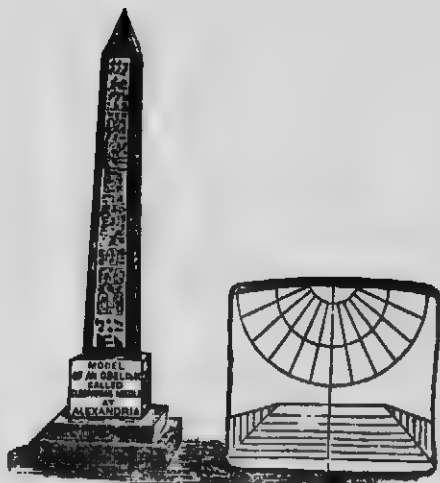


I. The OBELISK in ST. PETER'S SQUARE, ROME, casts its Noon-shadow along the Meridian-line, shown on the photograph to the right, extending beyond the fountain from the front oval disk which is inscribed with the words "Canceri Solatici," manifesting its purpose to register the Obelisk's shortest shadow there passing at noon on the "Longest-Day" (June 21st) when the Sun reaches its northernmost range on the Tropic of Cancer.

The second disc registers both the shortening shadow in May and the lengthening shadow in July. The third disc records the limits for April and August, and so forth.



III. Meridian-line of St. Peter's Obelisk at Rome—demonstrating the insufficiency of the largest Obelisks to register 31 noon shadows between those discs. Later Obelisks were elevated on masonry as per Block IV to cast longer shadows.

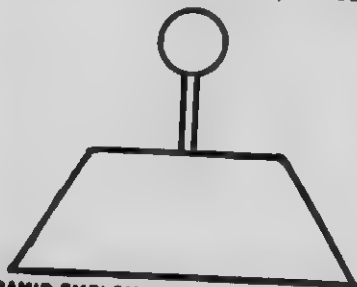


II. Model of "Cleopatra's Needle," removed from Alexandria to London, where its Dial with the Meridian-line and seven steps (like the Dial of Ahas) is in the British Museum.



IV. The Obelisk or "Lat of Asoka" in India is of special interest because the ancient native writings record the fact that this register of Latitude and locator of the Seasons was during three separate generations raised higher by building terraces of masonry to extend their Meridian shadow register and so derive truer knowledge of the passing Seasons, as Plate H proves the Egyptians did.

(PLATE "H")—EVOLUTION of the PYRAMID SYSTEM



PYRAMID EMBLEM as kindly drawn for me by PROFESSOR MASPERO in Gizeh Museum, EGYPT

I. This emblem (usually found in the Pyramid Temples) represents the Sun disked on the Obelisk at noon, when raised on a Mastaba to cast a longer Meridian shadow. If the Mastaba and Obelisk are both 100 ft. high, the noon-shadow from the apex of the Obelisk would be twice the length of the Obelisk's own shadow; and as the shadows would be increased in length proportionately as successive Mastabas were superposed the Medium Mastaba below enlarged the Obelisk shadow's length about sixfold.



AA ORIGINAL MASTABA.

SCALE 1 inch to 100 feet.

II. Section of the oldest Pyramid, at Medum, disclosing its successive increased heights to which its Obelisk was raised above the original A. A. Mastaba of polished granite as the nucleus.



III. Photo of Egypt's first Pyramid at Medum, proving that it never had the uniform Equinoctial slope developed on later Pyramids. The next oldest Pyramid of Sakkarah was similarly built in steps. The Egyptians ultimately found that the sloping Pyramid was best to attain the greatest height required to differentiate the daily shadow lengths on the Meridian line. See R. A. 200, also Sakkarah Pyramid on Plate "Q."



THE "SAFETY PYRAMID" OF SAKKARA.

IV. This shows the Intermediate shape between Step and Slope Pyramid building, whilst trying to find the best slope.



V. The Gizeh Pyramids near Cairo. These evidence the Final Period of Pyramid building, by which the basis of both our Calendar system and Astronomy were derived, as explained in the latter half of this pamphlet. The Inundation water is over the fields.



VI. The Babylonian sculpture of King Naramsin, 3750 B.C., demonstrates that these Ancient Nations used Pyramids to locate the movements of both the Sun and Moon for national calendar purposes. The fine sculpture looks like the work of captive Egyptians.

(J1.) WHY PYRAMIDS WERE BUILT

1. The greatest need of every nation is to produce adequate supplies of food to feed its people throughout the year. That need was most intensified during the Era of Pyramid Building, more than 3,000 years ago, when the increasing populations of Assyria to the north and Ethiopia to the south insistently strove to conquer Egypt.

2. In that Era, conquest generally resulted in slaughter of the conquered men, and bondage for their women and children, involving family and national ruin. Consequently imperative necessity forced the Egyptians to maintain at least as large a population as the increasing Assyrians.

3. As the total area of land capable of cultivation was limited to about 13,000 square miles in the Delta area and the two narrow Nile-side strips within the sand-hills dividing the surrounding vast Desert Area of Egypt (as evidenced by the adjoining map), the Ancient Egyptians could not increase the cultivable area much beyond the confines of the yearly Inundation. Therefore they were compelled to rely upon producing more crops from the same area of cultivation by intensive culture.

4. Such increased crops could only be intensively developed by locating the precise seasons for each tilling and sowing for the numerous varieties of crops required. They grow many more varieties of crops than we.

5. That precise knowledge of the Seasons could not be made available without studying the Sun's Seasonal Elevations.

6. Those Seasonal Elevations could best be located each year by studying the Sun's noon-day height locations on the Meridian.

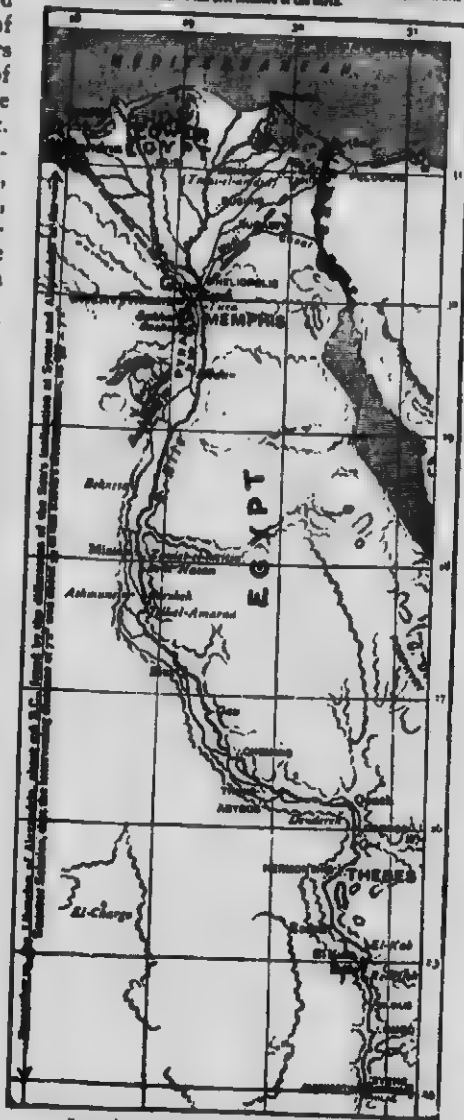
7. As Egyptians had neither telescopes nor "smoked-glass" for observations, and the glare of the Sun in the clear Egyptian sky was too fierce for "sighting" direct, they had to observe the Sun's Seasonal position indirectly by measuring the ever varying lengths of Sun-shadows cast from the highest possible structures.

8. Pyramids as huge Sun-dials were the easiest structures they could best erect sufficiently high to differentiate the lengths of Sun-shadows which indicated by their different daily lengths the best Season for each of the yearly recurring operations necessary to produce abundant crops. They ensured permanent prosperity and national safety by maintaining sufficient men to defend and intensively cultivate their land.

Thus Pyramids were built to safeguard the life of Egypt which depended upon the Nile Valley's advantages being utilized by deriving and applying Calendar knowledge.

MAP OF EGYPT.

N.B.—The series of Pyramids are situated in an almost direct line from the Delta of Egypt. This map is also interesting in showing the Alexander to Syene route by which Eratosthenes obtained the first measure of the earth.



From Erman's "LIFE IN ANCIENT EGYPT."
(By the kind permission of Messrs. Hamill & Co., London.)

The significant feature of Egypt is the Nile, which in serpentine form meanders majestically from the Equator to the Mediterranean shore, where its about 8,000 square miles of the richest and most profitably situated Delta-land in the world is shaped like the broad flat head of the "Asp"—that vital part of the sacred representation of the flowing Nile regarded as the life-sustainer of Egypt, evidenced surmounting the Sphinx Brow when originally completed, and used as the Royal Emblem, illustrated on the front-cover.

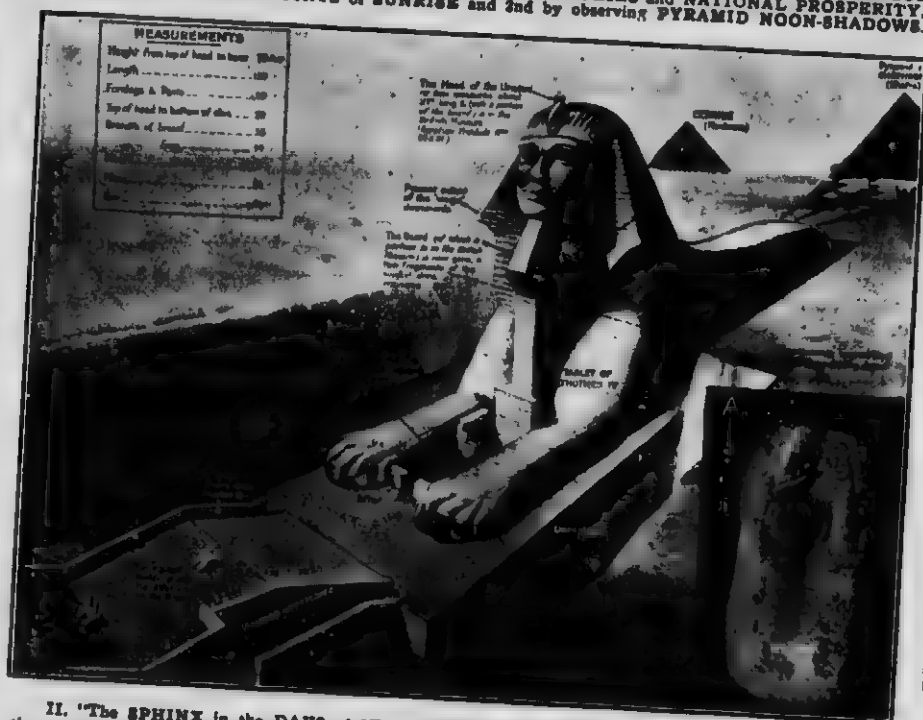
Now that we realize how seriously Egypt was dependent upon that Delta and the long but very narrow serpentine-shaped area along the Nile Valley, to grow their vital food supplies for the millions of Egyptian people, we cease to wonder why the Egyptians selected the Serpent as their head-dress emblem of Royal Power, and built the Pyramids to direct the utmost use of Earth's most productive Agricultural Area from that Apex of control, whence the numerous channels of the Nile float produce from farms to cities.

(Plate "J") BIRTH-PLACE of ALMANAKS and CALENDARS



This range of the Sphinx's Sun-Amplitude is too narrow to locate precise days. It could only approximate the Seasons within about one week (See Front-Plates C, D, E and F.)

I. The PYRAMID AND SPHINX AREA, adjoining the DELTA of the NILE—that MOST PERMANENT FERTILE AREA ON EARTH, where the GREATEST VARIETY of CROPS YIELDED the RICHEST REWARD for AGRICULTURAL DEVELOPMENT, and offered the GREATEST INDUCEMENTS to CALENDAR DAYS to WIN FOOD SUPPLIES and NATIONAL PROSPERITY, 1st by locating SPHINX-POINTS of SUNRISE and 2nd by observing PYRAMID NOON-SHADOWS.



Location of Rear-pointers (Obelisk tops or movable survey-tripods) used like the Priest's-pointers on Fore-Plate E, or the Rear-tips of our Centre-Seconds-Pointers on Clocks and Watches, where the circumference when divided into the horizon's 360 degrees would indicate the "Longest Day" (June 21) across the 12 1/4 minutes point, and the "Shortest Day" (Dec. 22) across the 17 1/4 minutes point, with the "Equinoxes" mid-way of that 30 degrees Amplitude-range, located across the 15 minutes point

Front-plate "C" shows how used from the rear.

II. "The SPHINX in the DAYS of ITS PRIME" (vide "The Sphere," 20th Dec., 1913), showing the sacred ASP as the pivot-pointer above the Brow. The inset "A" displays the Asp's Head and Eye, now in the British Museum. I have also inserted the Rear-points S. E. and W. denoting the Summer Equinox and Winter points of Amplitude observation for Seasonal Sunrises as rayed on the upper plate, to indicate how ancient observers approximated Season-dividing days, to arrange early Calendars, as Jacob did.

(12) The following condensed list of some of the numerous Calendar announcements still required by Egyptians every year, demonstrates how vital such knowledge was to ensure prosperity of the Ancient Egyptians.

SEASONAL NOTES FROM 'THE MOSENA "EGYPTIAN (COPTIC) CALENDAR;"

By R. L. N. Mitchell, B.A. (Oxon.) Published by Lane & Co., London.

<p>1st Koptic Month, TOTH.</p> <p>Dec. 11 Koptic (New Year, 1847)</p> <ul style="list-style-type: none"> 12 Few clouds 13 Jasmine planted 14 Cotton gathered 15 Olives gathered 16 The day and night equal 17 The end of Summer Autumn begins. Linen abundant 18 Richest time of the Nile 19 Opening of water channels 20 Sowing of cotton & other fruits. Almonds gathered 21 Sowing barley (Upper Egypt) 22 The sap of figs running 23 Great abundance of small fishes 24 Sowing of wheat and sowing of fruit. Gather honey 25 The leaves of trees begin to fall. Sowing winter vegetables 26 Warm clothing should be worn <p>2nd Koptic Month, BAHEN.</p> <p>Oct. 12 Cows ready for milking</p> <ul style="list-style-type: none"> 13 General sowing of beans begins. Beans harvested 14 Rice harvest 15 Coupling of cattle, sheep & goats 16 Sowing of millet, rice and bastard cotton 17 General sowing of barley and sorghum 18 Kibby is out 19 A hurricane of youth 20 Beginning of rains and fog. Drows much warmer 21 Wind not now will remain sound 22 Plant cotton, garlic & asparagus 23 Cut down of wheat & sorghum 24 Sowing of wheat (Lower Egypt). Sowing lentils, lupins & chickpeas 25 Good season for preserving fruit 26 Begin to sow beans <p>3rd Koptic Month, KATUH.</p> <p>Nov. 13 Sowing of poppies, corn and cornmeal</p> <ul style="list-style-type: none"> 14 First and home come up 15 Departure of birds of passage 16 Pull up cotton plants 17 Sugar-cane for sale 18 Abundance of bananas 19 Sowing of sheep to pasture 20 Harvest of grapes 21 Radish seed pressed for oil 22 Sowing of lentils. End of sowing lentils, chickpeas and lupins 23 Sowing of beans 24 Harvest of chestnuts. Appearance of winter vegetables 25 Horses sent to green pasture 26 Sowing of wheat and barley 27 Olives sent for oil. Sowing of radishes <p>4th Koptic Month, KITHAN.</p> <p>Dec. 11 First cutting of clover</p> <ul style="list-style-type: none"> 12 Lambing season 13 End of Autumn 14 Harvesting of fields. End of sowing rice here and there. Sowing of trees; planting large trees 15 Christmas of the French 16 Ripening of figs 17 Fasting season of common. Harvest of cotton <p>1901.</p> <p>Jan. 1 Fasting of vices</p> <ul style="list-style-type: none"> 2 Abundance of sugar-cane cut for pressing 3 Sowing of beans 4 End of sowing poppies 5 The cotton has eggs <p>5th Koptic Month, TUBEN.</p> <p>Jan. 9 Gathering of oranges</p> <ul style="list-style-type: none"> 10 Tomatoes gathered 11 End of a running vine 12 Sowing native tobacco 13 Pull carrots and coleworts 14 Upright winter crops and trees 15 Transplant date-palms and young trees 16 The sap of trees begins to ascend 17 Good season for making dromedary 18 End of sowing cotton. Gather seed of cotton <p>6th Koptic Month, AMANEN.</p> <p>Feb. 1 Sowing of high-bred camels</p> <ul style="list-style-type: none"> 2 Sowing ripe for cutting. Goats in heat 3 Planting of figs 4 Planting of beans 5 Planting of vases and punch <p>7th Koptic Month, ANANEN.</p> <p>Feb. 1 Sowing of cotton</p> <ul style="list-style-type: none"> 2 Planting of roses, jasmine and most flowering plants 3 Planting of vases and poppies 4 Sowing beans gathered 5 Sowing native cotton <p>8th Koptic Month, KATHAN.</p> <p>Mar. 1 Sowing of Miskis cotton</p> <ul style="list-style-type: none"> 2 End of season for planting trees 3 Begin to plant sugar-cane 4 Abundance of waterfowl 	<p>7th Koptic Month, BAHANEN.</p> <p>Mar. 11 First of March</p> <ul style="list-style-type: none"> 12 Cotton should not be spun 13 Season for cutting of cottonwood 14 Sowing of cotton. Sowing summer crops 15 Sowing to be taken from clover. Sowing early cotton 16 Gathering of flax and hemp 17 Sowing of indigo 18 Beginning of sowing 19 Pull up flax 20 Sowing cotton 21 Gather natural seed <p>8th Koptic Month, KATHAN.</p> <p>Apr. 1 Sowing native cotton</p> <ul style="list-style-type: none"> 2 Sowing of wheat. Sowing to be taken from clover 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>9th Koptic Month, KATHAN.</p> <p>May 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>10th Koptic Month, KATHAN.</p> <p>June 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>11th Koptic Month, KATHAN.</p> <p>July 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>12th Koptic Month, KATHAN.</p> <p>Aug. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>13th Koptic Month, KATHAN.</p> <p>Sept. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>14th Koptic Month, KATHAN.</p> <p>Oct. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>15th Koptic Month, KATHAN.</p> <p>Nov. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>16th Koptic Month, KATHAN.</p> <p>Dec. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>17th Koptic Month, KATHAN.</p> <p>Jan. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>18th Koptic Month, KATHAN.</p> <p>Feb. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>19th Koptic Month, KATHAN.</p> <p>Mar. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>20th Koptic Month, KATHAN.</p> <p>Apr. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>21st Koptic Month, KATHAN.</p> <p>May 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>22nd Koptic Month, KATHAN.</p> <p>June 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>23rd Koptic Month, KATHAN.</p> <p>July 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>24th Koptic Month, KATHAN.</p> <p>Aug. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>25th Koptic Month, KATHAN.</p> <p>Sept. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>26th Koptic Month, KATHAN.</p> <p>Oct. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>27th Koptic Month, KATHAN.</p> <p>Nov. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>28th Koptic Month, KATHAN.</p> <p>Dec. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>29th Koptic Month, KATHAN.</p> <p>Jan. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>30th Koptic Month, KATHAN.</p> <p>Feb. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax <p>31st Koptic Month, KATHAN.</p> <p>Mar. 1 Sowing of flax</p> <ul style="list-style-type: none"> 2 Sowing of flax 3 Sowing of flax 4 Sowing of flax 5 Sowing of flax 6 Sowing of flax 7 Sowing of flax 8 Sowing of flax 9 Sowing of flax 10 Sowing of flax 11 Sowing of flax 12 Sowing of flax 13 Sowing of flax 14 Sowing of flax 15 Sowing of flax 16 Sowing of flax 17 Sowing of flax 18 Sowing of flax 19 Sowing of flax 20 Sowing of flax 21 Sowing of flax 22 Sowing of flax 23 Sowing of flax 24 Sowing of flax 25 Sowing of flax 26 Sowing of flax 27 Sowing of flax 28 Sowing of flax 29 Sowing of flax 30 Sowing of flax 31 Sowing of flax
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Note.—The Coptic Egyptians still use the permanently equal months of 30 days, with 5 days intercalated at the year's end, Pyramid Priests originated.

CALENDAR most needed in EGYPT

Beyond the preparation of the Dykes and Channels for the Nile's Inundation, the nearly 1,000 miles length of Egypt necessitated prompt administrative orders being despatched in advance by the Pyramid Priests to their distant henchmen, who directed the myriads of Egyptian slaves working the land which was then almost entirely owned by Pharaoh and the powerful cults of Pyramid and Temple Priests.

The adjoining Egyptian (Coptic) Calendar is that from which Julius Caesar derived the 365¼ Days' year-length of the Roman Calendar that all Europeans later adopted. Its Egyptian advantage of equal months of 30 days each he failed to copy. Their 5 days added at the

NOTES re the EVOLUTION of ALMANAKS and CALENDARS

By M. E. COTSWORTH, F.G.S.

Erron's Note.—Mr. Cotsworth has made very extensive and thorough researches in remote parts of the world into the origin of our methods of marking the advent and extent of the seasons and the division of our year into days and groups of days. He has arrived at the conclusion that our present system is irrational and a source of loss to mankind in general. He has secured the support of several governments in his labors to establish a "Fixed Calendar" as a "Yearal" for use throughout the world. He hopes that this "Yearal" will be adopted for general use about the years 1917 or 1918 as the most favorable time to substitute it for our present system. If we were suddenly deprived of our present facilities for marking the passage of time we should at once realize the extreme importance of the Calendar. We do not stop to think once in a year of the vast and complicated organization that is working day and night to govern our system of keeping time correctly. In ancient days this work was so essential to the very life of the people that the men who had charge of the task were invested with all the attributes of priesthood and their work was regarded as a sacred calling. In Egypt, for instance, the birthplace of the Calendar, knowledge of the proper time to sow seed was so important that any error in computing it was likely to lead to famine and cause the death of thousands of the Egyptians. It is probably true that the fact that there "was corn in Egypt" when Jacob and his sons were starving was due to the superiority of the Egyptian method of Calendar recording. Mr. Cotsworth explains the Patriarchal Age, the origin of the Pyramids, and other intensely interesting facts about the Evolution of Almanaks and Calendars.

Fuller evidences may be found in his book "The Rational Almanak" on its pages quoted as "R.A."

The evolution of Almanaks and Calendars began thousands of years before historic records were available for the dawn-ing intelligences of primeval men, who first noticed the changes of the Seasons and stored food for later use.

The length of the year was far too long for their mental perceptions, and the Sun's incessantly varying elevations too intricate for them to attempt to elucidate the mystery of the Sun's vivifying disk of glowing light they worshipped as the source of heat, life and power. Early tribesmen were so engrossed with the wild struggle for existence that systematic tracing of the very slow progress of the Sun through the Seasons could hardly be thought of until long after these 3 pre-year-counts of expanding units naturally evolved, as intelligence for observations developed slowly among the civilizations then separately arising in different parts of the world:

1. Monthly tallying of moons passed.
2. Counting 5 moons by hand or tally.
3. Counting 6 moons for summer and another 6 moons for winter. Instead of this 3rd stage, some tribes extended their next count to mis-named 10 moon-"years."

Notched Almanaks as permanent recorders of Months, preceded the Evolution of Calendars.

It is significant that the Ancient histories of Egypt, Assyria, China and other nations began by counting vast numbers of lunations (moons), such as the then probable life limit of 1,000 moons (81 years) recorded for the mystic Helios, son of Vulcan, in the Old Egyptian Chronicle sculptured on the Great Temple at Karnak.

There is a strong probability that as the Sun's-noon-disk changed altitude so slightly, early men could only count its daily appearances up to the 10 digits of their hands. But the incontrovertible fact is that the near weekly changing phases of the moon (from which our week was derived as the 7 full days in each distinctive quarter), were the only possible means by which early communities could distinguish times to count their lives and approximate the Seasons in lunar months, as remote tribes still continue to do by monthly "notches" cut upon tally-sticks or tent-poles, of simpler form than those evidenced by plates on pages 2 and 43. Men merely cut one notch per moon on that first form of Almanak used to record moons passed. That copies in the writer's ~~possession~~, such as the notched-stick-moon-tallies used by the Fiji Islanders, prove.

Moon-sticks used in Fiji Islands to tally Moons early men tallied as "Years."



The upper stick with 36 consecutive notch-cuts, plus one at the end—together recording 37 moons—is part of a series on a model of the tally-stick used by the natives of the Fiji Islands to record their ages, &c.

It is of special interest as exemplifying the tally system used by South-Pacific Islanders whom the British Governor, about the year 1870, agreed to employ for wages payable at the end of 3 years.

Those primitive people, like all the earliest Races of Mankind, did not know what a year was. Their untrained minds could not grasp the great 365-day-length of time, which we are only able to understand through our printed Calendars measuring it into defined weeks and months.

They explained to the Governor that their only method of measuring time, beyond each day, was by the moon's cycle. Then the Governor's interpreter explained that as there were 12 moons in one year, they would have to serve during 36 moons—which he indicated by 3 displays of the 10 digits on his open hands, denoting 30, plus one hand for 5 and his 2nd thumb as the 6th unit completing the 36.

At the end of the 36 moons those servants asked for their wages, and were told that they had another moon (month) to serve. But they promptly disproved that statement by producing their tally-stick on which they had, according to their custom, cut a notch for each moon served.

The difference of 33 days—between the Governor's 3 years of 365 days, together totalling 1095 days, and his servants' 36 moons of 29½ days each, together totalling 1062 days—was found to have arisen through the fact that 12 moons wax and wane during 354 days, leaving 11 days more in each Governor's year than his servants were unintentionally led to believe.

As those 11 days per year totalled 33 days, or more than another (37th) moon, the Governor rightly decided to pay them for that 37th moon they notched at the end.

The foregoing is typical of the tallying-

system earliest Races necessarily developed, before leaders amongst their descendants were enabled by long ancestral experience to evolve the next stage of counting by the combined unit of 5—so inevitably suggested by the 5 digits (4 fingers and thumb) on each hand, and evidenced by the Mexican "Indications" and dot-counts opposite.

From the time mankind began to take interest in sowing seeds to increase food supplies, more permanent records, such as notches on sticks and dot or switch counts became a practical necessity for the rulers of tribes to tally the number of days in each season, to locate the best times for sowing various seeds to ensure better crops.

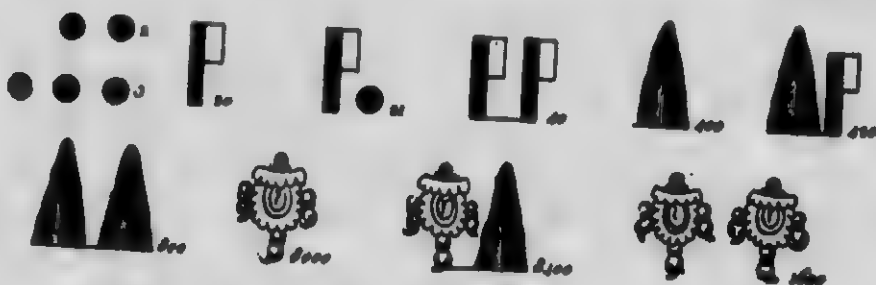
NOTCHES USED FOR COUNTING LIVES

From the earliest recorded times "notched-sticks" have been used to tally the Ages of families, as shown upon the 2 lower illustrations where the 3 series of 41, 39 and 15 notches respectively served to count the co-developing ages of Father, Mother and Child when their later developed years were continuously tallied on such naturally fixed dates as suggested by the Longest (Mid-Summer) Day, or the Shortest (Mid-Winter-Solstice) Day—just as the Japanese still count all their children's Ages from the same all-pervading "Children's-united-Birthday" celebrated for all on the appointed fixed day now calendared in each year on the Japanese date corresponding to our 3rd of March for Females, and to our 5th of May for Males.

The 41, 39 and 15 notches are all recorded on the one family stick, which is shown as the lower pair illustrated apparently as 2 sticks, but in reality the 15 notch one, shorter in appearance, is simply foreshortened by the reflection through the looking-glass deflecting it further from the camera, while the 41 and 39 notches on the upper-side of that same stick were being concurrently photographed.

Such "notched-tally-sticks" have lingeringly survived in belated tribes through most of the Calendar developments of humanity.

Early Mexicans (Aztecs) used to count by dots, lines of 5 dots, and signs.



These NUMERICAL CHARACTERS AND SYMBOLICAL FIGURES from Clavigero's "History of Mexico," display some of the limitations which retarded the efforts of all early races to express numbers. The dots for units, the flag-like signs for twenties, and trees for each 400, all are applied as 20 signs to record the number 1787, with the year of 4 seasons sign prefixed. All that line was needed to write 1787. These, used 4,000 years after the Egyptian Pyramids were built, show how naturally men counted by 5, and thence expanded to our decimal system of 10; while such Races as the Israelites developed the 20 system of "Scores," which the Aztecs of Central America raised to its "square" of 400, and its "cube" of 8,000, as per the Tree and Fruit Signs above, all based upon the 20 digits on our hands and feet.

First Indiction.			Second Indiction.		
Year	Dots	Sign	Year	Dots	Sign
1.	.		14.	.	
2.	..		15.	..	
3.	...		16.	...	
4.		17.	....
5.		18.	.....
6.		19.	.....
7.		20.	.....
8.		21.	.....
9.		22.	.....
10.		23.	.....
11.		24.	.....
12.		25.	.....
13.		26.	.....

From "Prescott's History of Mexico" Page 82
ANCIENT MEXICAN INDICATIONS
 The Aztecs used 4 of these "Indications" of 13 years each, to distinguish each of the

52 years in their Great Cycle they thus divided into 4 Quarters, arranged in the order of their 4 signs for Rabbit, Maize (Reed), Arrow (Flint) and House, which repeated both vertically and horizontally, so that when prefixed by their respective number of dots denoting the required year's number in its "Indiction" with its emblem sign alongside there need be no doubt as to which year was intended, because each number of dots is only combined once with each of their 4 recurring signs. Their lack of a more concise system of figuring forced them to go through the cumbersome process of impressing each dot up to 13 and drawing the con-joined symbol. Thus to denote the first and last years of each Indiction they had to draw a Rabbit and 1 dot, a Rabbit and 13 dots; a Maize Reed and 1 dot, a Maize Reed and 13 dots; an Arrow and 1 dot, an Arrow and 13 dots; a House and 1 dot, a House and 13 dots—whereas by our numeral figures we only need write 1, 13; 14, 26; 27, 39; 40 and 52, to locate those years. It is not deemed worth the expense of engraving the 3rd and 4th Indictions, which only differ by beginning with the great Arrow and House respectively, as illustrated on "the Great Mexican Cycle of 52 years," shown on pages 39 to 42.

Ancients counted by units to 5 Months—thence to 6 and 10 Months

The European numerals 1 to 13 are prefixed for the convenience of readers, but the dots up to 5 per line in the 2nd column with the 4 years' range of recurring symbols in the 3rd column are reproduced as used by the Ancient dwellers in Mexico from remote Times until about 1,000 years ago.

Like all early civilizations, those people of the Aztec Race were only able to count from 1 to 5 during the early period of their evolution, therefore to record larger numbers they had to repeat tallies of 5 dots, cuts, sticks or other counters, as above, appending 1 more to denote 6, or 2 units more to record 7, and so forth till our 10 was later recorded by pairing the 2 rows of V, from which our sign X for 10 was derived as the double of V (five), through humanity having as their easiest counters 5 digits on each hand and foot, the 4 of which were used to denote twenty as the

ANCIENT ROMAN AND BIBLE SCORE OF XX

Most tribes and races, like the Arabians and Romans, advanced from 5 to the 10 month count as their next unit, mistranslated "year," long before they were able to locate 365 days to derive the 12 month year. Others like Jacob, the father of the Israelites, specially interested in breeding sheep and goats, counted from 5 to 6, which they long after doubled to derive truer 12 month years.

The 3rd column's emblems of Rabbit, Maize, Flint (arrow) and House denoted the recurring period of 4 years, at the end of which the Aztec Priests could by this, their zealously guarded sacred Calendar, secretly keep count of the 366th day (which we now publicly intercalate as "Leap Day") each 4th (House) year, and adjust their heraldic declarations for all agricultural operations accordingly to public advantage. *By that Calendar knowledge they developed Maize as the best Food America has raised for her people and humanity.*

ANCIENT LEAP YEARS

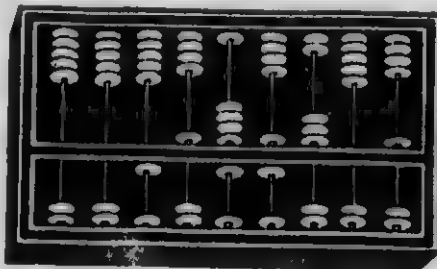
It is interesting to notice how naturally that extra (366th) day each 4th year gave to Leap-year such a National importance as instanced in the Olympiads of Greece, when the great Festival of Sports was held, and the like prominence of each 4th year in the Mexican (Aztec) Calendar, evidenced by the 4 recurring year signs arranged 13 times each around the great Mexican Cycle of 52 years.

Meanwhile they appear to have purposely allowed the Public Calendars to drift 1 day wrong each 4 years until 13 accumulated at the end of the 52 years' cycle, when they publicly added those 13 Leap-days to the end of the 52nd year as extraordinary Festival Days, to readjust their

Calendars more truly to the Season.

The advantages of and desire for power have led early Priesthoods of many pagan faiths to evolve similar Calendar mysteries, by using correct secret Calendars along with incorrect public ones, to retain and yearly renew their power over the toiling masses of people by truly announcing the Seasons which were partly creeping through misleading publicly calendared years—or occasionally wielding their power to vary the lengths of public "years," as we shall later record how Joseph in Egypt and the Pre-Christian Pontiffs of Rome respectively did, for and against public welfare.

The main points of interest in the above Mexican Indications are the incessant use of dots up to 5 later extended by such multiples of 5 as naturally led to the development of the "Abacus Method of Counting."



CHINESE ABACUS COUNTS BY 5

This engraving of a Chinese Abacus (there named a *suanpan* or reckoning-board) is shown as registering the number 5,196,301. The 5 digits of the hand are represented by beads threaded on wires in the upper part for use like the Aztec first rows of dots up to the number 5, a figure some tribes represented by one thumb for 5 and a pair of thumbs for 10. These are shown in the lower part of the frame where each bead counts 5, to which when moved up to the middle bar, the finger units above them are added for the number moved down their respective wires for each denomination, ending with "units" to the right.

Like forms of Abacus are still in daily use practically throughout Asia and North Africa, and were universally used throughout Europe until about 700 years ago for recording the successive arithmetical operations now performed by use of Multiplication Tables and applying the zero (0), which a great Hindoo mind many centuries before invented in India.

Until that brilliant and most useful idea was embodied for use as the symbol "0" to record *tens passed forward*, and passed by intercourse from India to Europe, arithmetic as we understand it could only

Red-Indians continue using 5 month counters—as Noah most probably did.

be done by similar laborious counting as that indicated by the tallies of "dots" upon the Aztec Calendar, or the use of the emblems, knotted string, beads, shells or other such counting devices as the tally-switches used by the Sarcee Indians of Northwest Canada.

Those switch-sticks, 5 bundles of 30 each, are illustrated by proxy on the next page, because the original set given to me by "Bull's Head," the expiring Chief of the Sarcees, appear to have got lost or destroyed while the extensive alterations were being made to the Yorkshire Museum, at York, in England, where I deposited them. They were so much like small skewers or fire-lighters that they may have met their fate by being consumed, but happily their authenticity is established by the photographs and records more conveniently noted on the middle pages of this souvenir concerning the Evolution of our Calendar.

The Sarcees, like other Red Indian Tribes, had progressed beyond the mere counting of Moon-months which, being nearer to 30 than 29 days long, led their Medicine-men as the tribal Almanak-makers to discern through generations of experience, that they could locate better times for sowing tobacco, grain and other seeds, by tallying 30 switch sticks as 30 days in every month, to better locate the Seasons and thence win more profitable crops for food and comfort.

Although they could not count beyond 5, their Medicine-man could tally up to 30 in units, after gathering 6 hand-counts of 5 each into 1 bundle of 30 pussy-willow-switches they used extensively as skewers to hang up buffalo and other meat to dry into pemmican, for food during Winter.

It was that haunting necessity to prudently provide in advance sufficient food to last their families throughout the Winter that ultimately impelled every tribe and nation to devise the most reliable system by which they could tally the passing days, to measure the length of time their yearly crops and game food would have to last, and the amount of each kind of food required to yearly sustain them during that period of greatest need.

The spur of hunger, and its dread, had impelled generations of Sarcee Chiefs to insist upon their Medicine-men tallying each passing day by pulling one tally out from the monthly bundle of 30 switches or skewers, as I found Chief "Bull's Head" doing on that Sunday morning before that powerful (but then blind) old warrior said his impressive prayer of thanks to the

Supreme Spirit, without knowing that any stranger was there seeing and hearing.

That day happened to be near the middle of the month, when I noticed that his bundle for 30 days was divided into 2 nearly equal halves—almost like the middle true halves of 15 skewers each illustrating the June and December monthly tallies . the next page.

From the slightly larger half-bundle for "days to come" secreted between the wall and his bed-side, he took the tally for the current day (as illustrated on the Repeat-month for the 1st day of a new month) and inserted it into the thong-tied smaller bundle of "nights that were gone," similarly secreted beneath the mattress near his pillow, as the Patriarch Noah likely did.

Through the interpreter he explained how his thoughtful ancestors had progressed "beyond mere primitive moon-counters" and arranged their Calendar ("which sufficed before the white-men came") by using 5 bundles of 30 tallies each, commencing with the first Thunder of God bringing Rain each Spring.

Next "Bull's Head" explained how easily they approximated the Seasons and time food had to last, by always splitting the more ruddy-tinted 3rd bundle into 2 halves of 15 each, before they began to count their months corresponding to our June and December, to locate the Longest and Shortest Days, by the 15th tally-stick, as the Chinese calendar 15ths as Full-Moons.

Finally he told how they had had to use the last bundle over again for the 6th and 12th months, as they had since learned that there were 12 months and a few extra days in their Year. Those extra days, between their Goose and Frog months, were used for their New Year's (Spring) Festival.

These are shown to demonstrate to readers part of the limitations which retarded Ancient Calendar and Chronological recorders, whose evolution of ideas and methods of record consequently most naturally expanded from the inevitable lunar month to 5 months and thence to 10, whilst more observant communities advanced from 5 to 6 months and thence to 12. That is approximately depicted in the adjoining illustration of the child's periodic growth during the first year of life's measure which all early Races used more or less as developing groups of months, wrongly translated "years," as proved by the great Chinese "Bamboo Classic" and records from Ancient Indian, Assyrian, Egyptian, Grecian and Roman civilizations.

6

The 5 BUNDLES CALENDAR used to count lives 1000 years ago, in mistranslated "Years" only 5 months long—next extended to 6 months and thence to 12 months. One bundle to tally equal 2 1/2 day-months had previously replaced uncertain 20 to 30-day Moons. The stick at the end denotes the passing day, each morning drawn from its month's bundle of 30.



Red-Indian names for their first 6 months, during which the sticks were pointed upwards

Frog	Sprouting	Egg (Duck)	Moulting	Flying	Deer
About April	May	June	July	August	September
		1-15 (Split) 16-30			



Red-Indian names for their last 6 months, during which the sticks were pointed down

Fall	Misty	Clear	Great	Eagle	Goose
About October	November	December	January	February	March
		1-15 (Split) 16-31			

This 5 Bundles form of Calendar having 30 sticks for the 30 days in each of their always EQUAL MONTHS, was probably the earliest style of record used by our remote ancestors to count their days that were gone, and their more important coming days when drawing near to their Seasons for Hunting and Sowing Seeds. The 5 Bundles of 30 twigs each, appears to have been the form most naturally used by the Bible Patriarchs, from Noah to Abraham and Isaac. Next Jacob apparently brought the 6th month into use, by again using his last bundle, as the Chinese and other races using Lunar Calendars have continued to do when adding 13th months. The Red-Indians of Northwest Canada still secretly use that 5 Bundles form of Calendar. They always split the middle bundle into 2 of 15 each, to locate Mid-summer and Mid-winter, as explained on page 5.

To Illustrate the GROWTH of Early MEN'S IDEAS of the LENGTH of the YEAR
Five parts of pictures; 1 by Schiel; 5 by Ralph Peacock; and 10 by Dohmen-Hinot.



Months 1 to 5—thence 6 to 12 (past 10)—to "one-year-old" I grew as you see.
 The Ages of Early great Bible-men—were counted in "parts-of-years," like me!

Certified "O.K."—Drummer of "Oyster Bay"

The above combined series of 4 pictures approximately represent the 1, 5, 6 and 12 months' stages of a child's "1st year" of life, with a view to impressing the minds of readers with the Chronological fact that there was a very similar but incomparably slower natural Evolution in the ideas of the early Tribes and Races of Mankind, who developed those pamaeral gradually expanding "month-grouping-units" (mis-translated as "years") by which the great Bible-recorded men in Pre-Exodus Times counted their lives.

Early men's ideas of the length of the year developed gradually during thousands of years, Primitive men looking through Nature's indications to the apparent source of life and power in the Sun, were too dazzled to be able to count the different numbers of days between long and slowly changing Seasons. They were baffled by the changing phases of the Moon, and over-awed by the mysterious approximation of recurring Moons to the re-vitalizing periods of female-generative-life.

They were also bewildered by the amazing myriads of ever-shifting stars, the brightest and most attractive of which, as Planets, whirled so confusingly past the slower stars, that obscured by erratic weather, it was practically impossible for primitive men to comprehend from those conflicting and complex manifestations, even the 12 and nearly one-third moons' length of the year their descendants later discovered.

Despite that array of formidable difficulties while impeded by rivalries and tribal warfare, their leaders during many generations, through stern experience of hunger and necessity to provide by agriculture food in advance for Winter, accumulated knowledge of those best days in the year for preparing the soil, sowing different seeds, mating live stock, etc., now necessarily embodied in our Agricultural Calendars, as the united result of the mighty Pyramid and other world-wide efforts they exerted during mankind's "Evolution of our Almanaks and Calendars."

The following NOTES show that BIBLE-MEN DID NOT LIVE ANY LONGER THAN WE

8

The Bible Ages of Patriarchs Only Equalled Our Lengths of Life

They could not discern the year's 365.242 days' length which we are only able to measure by astronomical instruments, printed records, arithmetical counts and precisely timed hours and minutes regulated by clocks and watches—all of which highly necessary aids to Calendar observation have been invented thousands of years since even Early Bible men zealously tried to trace out Nature's most useful and valuable secret of the "true length of the Year," to increase their food supplies.

As the Jewish historic record of the lives of early patriarchs printed in our Bibles is typical of other Ancient evidences and can be most easily understood, the following excerpts from the writer's notes on "The Natural Solution of the Early Ages of Men" (R. A. p. 65) may serve to demonstrate the 3 pre-year stages of "Almanak Evolution" recording time passed, which preceded the more useful development of Calendar dates as guides for seasons to come.

The following summary is typical for all patriarchs in their respective Eras, until the Exodus, when Moses having learned the true year's length from the Egyptians, gave the Israelites the great advantage of the 12 months year, as the surest means towards ensuring their permanent national welfare then and to their beloved children.

Unit used to count lives	PATRIARCH	MISNAMED "YEARS"	TRUE YEARS
Single moons only	Adam	930	75
	Methuselah	969	79
	Noah	950	77
3 months each of 30 days	Jerah	130	53
	Abraham	173	72
	Isaac	180	74
6 months (½ year)	Jacob	147	73
½ years (in Egypt); Years after Exodus	Moses	80—40	80
		120 40 40	

Exodus XII, v. 2, reads: "This month shall be unto you the beginning of months; it shall be the first month of the year to you." Moses derived the true year's length through his education as an Egyptian prince. That conclusively proves that the Israelites, including Moses and Joshua, at the Exodus first began to count their lives in full years. Consequently the earlier parts of their lives spent in Egypt (where they tenaciously held to their forefather Jacob's "Israelitish ½ year counts") should be reduced by half to derive the true years to be added to their final years lived in the Wilderness, as above shown for Moses whose recorded 120 years only totalled 80 of our years.

Joshua's 110 combined years corroborates that, as he was younger than Moses on leaving Egypt. Unfortunately his then age is not recorded.

Similarly no record exists to prove the age at which Joseph adopted the Egyptian full year as his life measure. Being the favorite son of Jacob, who doubtless taught him the most cherished secret of the ½-yearly sheep breeding seasons, he probably adhered to that count till middle age, say 40 true years, or 80 "Israelitish (half) years," to which may reasonably be added the remaining 30 as Egyptian full years, to complete his 110 years age, according to the last verse of Genesis.

After the "Exodus" all the ages of men recorded in the Bible are within the normal range of lives, the Psalmist naturally recorded as from "3 score years and 10" (70) to "4 score years" (80).

The term "year" was, during those 3 Eras, an expanding "Wheel of Time" evolved by 1, 5 and 6 (or 10) moon periods as units of life-count.

Will readers kindly note that the foregoing "Natural Solution of the Bible Ages of Men," as ordinary lives, has arisen simply through research into the evolution of early men's Calendar methods.

1ST (NOMADIC) ERA OF MOON COUNTS

Early men lived by fishing and hunting.

It was impossible for early races to count longer units of time than the month, indicated so mysteriously by the moon's changing phases when she was regarded as the mother of nature controlling the vitilizing period of motherhood, the drifting tides facilitating primitive fishing along the Coasts of early settlements, and also serving as the light of night to communities who necessarily travelled during the cooler hours of night, in those hot countries where most of the ancient great nations were cradled.

The 930 "years" Adam is stated to have lived, were simply 29½ day cycles of the moon only totalling 75 of our years of 365¼ days. The following evidences are submitted to demonstrate that the lives of the patriarchs did not exceed the present lengths of matured lives, but that they counted by shorter cycles, wrongly translated as "years"—neither ancient scribes nor later translators dare alter the hoary but literal age-counts of the people's remote ancestors.

Methuselah's recorded 969 "years" were simply "moon-counts," only totalling 79 of our full years. He may have been the oldest man tallied up to the close of that 1st era of moons, but easier conditions now enable men who live well ordered lives to exceed that age.

9

2nd (Pastoral) Era, Counting by 5 Moons—Possible Origin of the Deluge

This "Patriarchal Year" apparently applied from the time of Noah, until Jacob discovered the two 6 months' periods for double breeding sheep and goats. Naturally Noah's age was traditionally passed down by his descendants as the 950 "Moons" according to the 1st simple moon-counts used by his parents. But as population increased separate moon-accounts became so tedious, that the much better record of bolder notches beginning every 5th month (later counting like the Egyptians 30 days to each) was probably begun as the 2nd stage of Almanak Evolution, by cutting successive series of 5 notches on the tent-pole of their head tribesman, like the 7 week-day notches used during the Middle Ages, were cut to count weeks by the deeper notches for Sundays later illustrated on page 43.

Pastoral tribes were probably 1st led to notch on tent-poles their most profitable "5-moon periods" during which sheep and goats produce their young. Those animals were both the medium of exchange and important sources of food; therefore the times from mating till the crops of lambs and kids were born, gave the incentive to tally longer periods than single moons.

Some tribes found that it was easier to count a fixed 30 days per month, because the moon's 29.53 lunation is nearer 30 than 29 days, and 30 stick-notches easier to tally.

They could not tally fractions of days, and needed equal-months divisible into halves, so they used a 2nd long unit of 150 days, tallied as 5 months of 30 days each—or $1\frac{1}{2}$ "scores," as counted on hands and feet.

This 2nd "Era of 150 day periods" is strongly confirmed by the biblical Ages of Abraham's 175 "years," corroborated by Isaac's 180 "years," which when measured by our years of 365 days, indicate that Abraham only lived 72 years, and Isaac 74.

The following records indicate that the elaborate record of the "Flood" was apparently needed to impress that far better method of fixed count into general use among Noah's descendants, because he discerned that they could more assuredly increase their flocks and crops by using fixed 5-months periods of 150 days, which the writer found being used by the Sarcee Indians of Canada, as illustrated on page 6 and explained on the middle pages.

1. Genesis, Chap. VII, v. 24, records, "And the waters prevailed upon the earth 150 days."

1. Gen. VIII, v. 3, records, "and after the end of the 150 days the waters were abated."

3. As the River Nile's Inundation generally rises about 150 days and falls about 150 days, remaining at "low Nile" a little more than 65 days, the following facts seem specially significant:

4. Genesis, Chapter VII, verse 20: "15 cubits upwards did the waters prevail."

5. ("R.A." p. 138) 15 cubits equal 25 ft.

6. The Nile Inundation at Cairo (vide the *Encyclopædia Britannica*, Vol. VII, p. 706) usually rises that height of 25 feet, causing such an overwhelming flood that a family of nomadic predatory wanderers having crossed the Isthmus of Suez and temporarily settled on one of the slightly raised farm-stead-mounds, being surrounded by the Inundation may have had to construct a boat or raft which drifted out to the Mediterranean, where the East-drifting waves washed it to the Syrian shore, near which Noah's traditional Tomb is located near Baalbeck, north-east of Beyrout, the port for Damascus.

The knowing Egyptian frontiersmen may have relied upon the Inundation flooding the intruders out, as better than risking family lives in combat. Subsequently many generations traditionally telling Noah's story would likely add to its wondrous tale, after which the successive priestly recorders may, with the best intention, have added more elaborate details to make it more impressive, as some of them certainly did.

That seems evidenced by the strange insertion of the 6th to 10th months belonging to a later period, when the Arabs and Europeans prior to the foundation of the Roman Empire in 754 B. C. used the year of 10 months, which could not equate Abraham's age to 72 and Jacob's to 74 years, as the 150 days emphasized by the "Deluge record" makes credible. Further, the "Babylonian record" in the 11th lay of the Ancient Epic, Mr. Geo. Smith discovered, proves that only the live stock used on Eastern Farms were named.

Our beneficent Creator has ever tended to elevate—not to exterminate—humanity.

Semi-settled Era of 6 Month Counts, by Sticks or Sunrise Amplitudes

Early men could not adopt the later "10 month year" directly after using single moon counts. They had to learn to group months into fives counted on one hand, long before they could double that count as the 2 hands unit of 10 months.

That, the calculating *abacus frames* still used by Chinese and Eastern Nations demonstrate, by their 5 beads or balls threaded on wires or rods, linking up 2 counter-part-beads (used as thumbs) to pair in order to record "ten," as shown on page 4.

It is significant that the earliest system of tallying by "fives" is still used in every part in the world as these tables prove:

The Tally Table on the left shows how the universal 5 count indicates the totals figured in the second column. The more elaborate Table on the right is the British Customs Scale for scriving timber.

3RD (SEMI-SETTLED) ERA OF 6 MONTH-COUNTS, JACOB DEVELOPED AS SUMMER AND WINTER GROUPS OF MONTHS

This 3rd stage of Almanak Evolution based upon amplitude sun-rise observations, may be easily understood by reference to the illustrations on front plates C to F, and the first of the end plates "K," where the diagram and explanation of Jacob's rudimentary observatory of "pilled-stakes of Hazel, Chestnut and Poplar" are displayed as the most natural means which the increasing intelligence of progressive men could use, to locate the Seasons and thereby ensure yearly food to enable their families to live more settled, prosperous lives.

Young Jacob naturally following the noblest incentives for fuller life by striving to win a wife and flocks to live more comfortably, noticed by watching the varying points of sunrise, measured by what we now term the Sun's $\frac{1}{2}$ degree unit (vide Plate E, Fig. 1) that at the Mid-summer

Season—about June 21st—in Syria, the Sun-rises appeared about 30 Sun-disk-spaces 15° North of East (East by North), but in the Mid-winter Season—about Dec. 22nd—the sun-rises were located, as per Front-plate "D," about 30 disk-spaces South of East (East by South) at that season, which interested him most, because his crops of lambs and kids then began to multiply, and upon their increase his prosperity depended.

To locate those Seasons for future guidance, he yearly tried to locate the most profitable breeding seasons by driving more distant stakes to more truly point his lines of observation.

As will be later explained, thoughtful Jacob was naturally led to count two of his misnamed "years" to our one. That $\frac{1}{2}$ -year basis of count appears to have been used as the measure of his life, and by his descendants, until the Exodus.

Generally the early nomadic tribes developed their long-time units of 5 and 10 months entirely by moons, until their successors began to realize the advantage of sowing seeds, when 30 fixed days per month often replaced the lunar period of 29.53 days. Next, as experience showed that better crops were gained by approximating the seasons, they were led to watch the seasonal sunrise points by erecting their horizon-wards advancing series of observatory stakes, as indicated on end-plate "K," using different kinds for each season, and notching or peeling distinctive rings thereon to denote the which years, as the Philistines of Gaza and the Ancient Druids of Western France similarly erected long "sun-set" rows of monoliths, where the level sea horizon season-points could not be differentiated until "sighting posts" were erected to focus season-locating observations on land adjoining Western shores. The seasons can be approximated as well by sunsets as by sunrises, provided that natural or artificial points are available for yearly tests. See Fore-plates C to F.

Those early British teachers—the Ancient Druids—for like Almanak purposes erected the triple monoliths seen footing front-plate E. The larger illustration here following, displays more clearly the Eastern horizon-directing curve of those most important W. E. and S. points which divide the Seasons by nearly three times the degrees of Amplitude Jacob had for guidance, as reference to the diagram on front-plate "D" proves. Jacob had only

British Druids Observed the Seasons by Sunrise and Sunset Amplitudes

the 30 sun-disk horizon range within which to differentiate the 182 days in each half year, which made his task (like that of earlier Sphinx observers) nearly thrice more difficult than the nearly 3 times wider

82 horizon-sun-breadths range that enlarged the "Amplitude Range" between the Midsummer and Midwinter sunrises, for the easier guidance of Ancient British Druids, as next pictured.

These three everlasting wedge-shaped monoliths on the rising ground overlooking the widest plain in England, have an uninterrupted sunrise view to the undulating hills of the Yorkshire wolds bounding the eastern horizon. They formed a most ideal "Amplitude Observatory" for locating the seasons by the most obvious and best method early people could employ to calendar their "years."



The three huge Druidical "Arrows" at Aldborough, near York (England), mark the site of the earliest Capital of the ANCIENT BRITONS, whose leading advisers, the thoughtful "Druids," probably about the time of Jacob's death (1689 B.C. See Fore-plate F. fig. III) there used the "Amplitude Method" to locate the Seasons by the W E and S points of Sunrise, aided by the opposite Sunset-points.

The essential W, E and S sight-pointers so suitably named "arrows" weigh about 35 tons each. Heavy weight was intended to prevent enemies from destroying and weather from wearing away those fixed points intended for permanent observations during many generations. They formed the triune pointers of this ancient observatory, used as the Sphinx points W, E and S, displayed on foreplate "J."

The Druidical "Amplitude Method" of observations being dependent upon watching the Sunrise (East) and Sunset (West) points, naturally led the thoughtful Druid observers to erect these highly useful "Arrow-pointers" with their thinner wedge-like sides facing the East and West respectively, to give truer points for their observations, made from their two "sighting locations" fixed to the right and left of the middle monolith as their "pivot pointer."

BY JACOB'S METHOD WE CAN DOUBLE CROPS OF SHEEP AND GOATS BY BREEDING HALF YEARLY IN BRITISH COLUMBIA AND OTHER SUITABLE PARTS OF THE WORLD

On page 257, ending the writer's description of ancient almanacs and calendars printed in the *British Columbia Magazine* for April, 1912, the reference to the double breeding seasons so patiently won from Nature by Jacob to enrich his family who developed the nation of Israelites, led many readers to enquire how Jacob found the great and valuable secret by which he redoubled the offspring from his flocks of

both sheep and goats, by breeding both flocks in March and again in September.

While fickle Laban could only increase flocks in the ratio of one, two, three and four, Jacob solved the problem of how to increase facilities of living for his family, by breeding sheep and goats in the double ratio of two, four, eight, sixteen and so forth, by the simple means recorded in Genesis, Chapters XXX to XXXI, when rightly read.

Jacob's Seasons of 6-Months for Double-breeding Sheep and Goats



EWES 41 AND LAMB, AGAIN WITH HER TWINS,
FEB. 18, 1912 SEPT. 6, 1912

This ewe was rested during the autumn of 1913, but had triplets in the spring of 1914

ALSO WITH HER OTHER LAMB, BORN
MAR. 31, 1913, AND HER YEAR-OLD LAMB

The plain fact is, vide XXX v. 37, that "Jacob took him rods of green poplar, and of the hazel and chestnut tree; and pilled white strakes in them, and made the white appear which was in the rods."

Those strakes or notches enabled him to recognize their respective dates and locations in his primitive observatory as diagrammed on End-plate "K," when he set them up the forked valleys of streams meeting where his "Fixed Central Sighting-Stake" or stone was erected—just as the ancient Druids during many centuries set up more permanent stone pillars in rows directed to enable them to locate precise seasons for farming purposes, by watching the monthly variations of the points of sunrise along the horizon.

The vital point of observation he had to watch for was the central distant stake in line from the central sighting stake, to see when the sun rose due east on March 21 and September 23, in order to guide him to the right dates for driving the rams and he goats to their respective flocks for breeding, as Syrian farmers now locate by means of printed calendars Jacob lacked. Jacob had only the sun and his own powers of observation to guide him by means of the farthest stakes he erected each six months, as indicated by the recent dates I have recorded on End-plate "K's" diagram.

Jacob was not the trickster some people wrongly judge him, after superficially reading Genesis XXIX to XXXI. While abiding by his contracts he served unobservant Laban according to his deserts. After Laban had reduced Jacob's wages ten times, and palmed Leah upon him instead of Rachel, it was not reasonable to expect

that Jacob would disclose to Laban the great secret means by which sheep and goats could be so rapidly increased, when they were then used as we use "money" (for exchange). That secret was consequently worth more than any patent since invented, so long as he could ensure good grazing for his flocks in the sheltered valleys during winter, and drive them to the bracing hill-sides in summer, as he could so easily do in Syria.

As both sheep and goats carry their young five months, Jacob allowed one month for the lambs to draw the mother's milk, and then got them to rely more upon the tender grass from the time rams were mated to the ewes. So Jacob (by observing that during about 6 cooler moons the Sun rises appeared South of his East stake, but during the warmer 6 moons they were located North of East) established two breeding seasons of six months each, which have been misinterpreted as "years."

Consequently the seven seasons he served for Leah and Rachel, respectively, were only three and a half years for each. It is further interesting to note that his descendants kept to that secret form of reckoning their lives until Moses won the secret of the true year's 365¼-days length from the Egyptians, as the most useful knowledge requisite to enable the Israelites to provide food during their forty years in the wilderness, where Arab tribes still live by the

SAFER MEANS

Thus Exodus XII, verse 40, mistakenly reads, "Now the sojourning of the Children of Israel, who dwelt in Egypt, was 430 years," which were really half years, as proved by their going down to Egypt in 1706 B. C. and their Exodus in 1491 B. C.

Jacob's Half-yearly Breeding of Sheep Successful in British Columbia

—a difference of 215 years only. Similarly Jacob lived only 73½ years, counted as the 147 seasons (not years) of six months each.

These three pictures of ewe No. 41 and her lambs raised in both the spring and autumn seasons at the Canadian Government's Experimental Farm at Agassiz, B.C., demonstrate the fact that she had a lamb on February 18, 1912, and twins on September 6, 1912, followed by another lamb on March 31, 1913—lambs each six months in between!

The following copy of a letter from Superintendent Moore establishes the fact that this great benefit of increasing the supply of human food in the form of mutton and lamb can be steadily attained without material increase of the cost of keeping the ewes, consequently the cost of production can be reduced considerably.

DOMINION OF CANADA DEPARTMENT OF AGRICULTURE

Experimental Farm for British Columbia

Agassiz, B.C., November 19, 1913.

Dear Sir:

In reply to your note of recent date, we beg to advise that ewe No. 41 did not have a lamb this fall. . . . We did not wish her to have any, as four in succession is almost too hard on her and detrimental to the offspring.

With regard to the other sheep, we beg to say that two others had lambs this spring and fall; one had hers while we were away at the exhibitions and a pair of twins died. Ewe No. 39 had a ram lamb on February 24 and again a ram lamb on September 26, 1913.

Faithfully yours,

P. H. MOORE,

Superintendent.

Moses B. Cotsworth, Esq.

N.B.—These sheep had not the extra change and feed Jacob so easily found in Syria.

When the higher valleys above the Lower Fraser become available for grazing, as in Syria, the abundant feed and invigorating air will enable the double crops to be maintained, as they are now in Southern England, Argentina and other parts where grazing for two seasons is available for two crops of lambs per year.

But half-yearly lambing is not practicable on the colder prairies and Eastern provinces of Canada.

The main point is that, by using Jacob's method in British Columbia we can reduce

the cost of living, as indicated fifteen years ago in my preface to the "Rational Almanak" by the words: "Much can be done to ennoble our race and benefit mankind by patient efforts: even in such unlooked-for directions as increasing the production of sheep for food—whilst attempting to reform our drifting calendar system, which needlessly changes day-names throughout every year," and fails to yield the equal monthly measure needed in these times of monthly earnings and payments.

Those italic words, written during the writer's travels under ideal conditions through Syria and the Holy Land, observing the natural facilities which there existed for duplicate breeding, referred to the patient observation of the breeding seasons by Jacob (as recorded in Genesis, Chapters XXVI to XXXI) during the "years" he labored for Laban, whilst serving for Leah, Rachel and the "ring-straked, speckled and spotted" sheep and

The superscription prefacing the last half of the XXXth Chapter of Genesis reads, "Jacob's policy, whereby he became rich." Verses 31 to 43 under the light of research made during recent years into the Calendar methods of Ancient nations, discloses the very natural and worthy process by which Jacob laid that foundation of prosperity to ensure the success of his family and their descendants, who during the succeeding 1,000 years developed the thriving nation of Israelites, whose unprecedented welfare and happiness culminated in the reign of Solomon.

It may seem strange to find after the lapse of nearly 4,000 years that beyond the sterling characteristics of that worthy family for steadfast perseverance, the practical factor which led to their abundant and lasting success was the value of Almanak knowledge of the Seasons which Jacob discovered and inculcated secretly into the minds of his children—as the Egyptians and Babylonians (who both bred sheep and goats twice yearly) with other great races similarly won permanent prosperity for their nations.

The limited space available for this article precludes recording the more complete proofs detailed in the 43 pages from 149 onwards in the "Rational Almanak" and since proved by extended researches.

How Joseph Nationalized the Land of Egypt

But it seems advisable to vitomize therefrom, as below, the natural planation the writer has derived concerning the astute scheme of highest statesmanship by which Jacob's favorite taught son, Joseph, later accomplished his most beneficial Land Reform in Egypt.

By working through the then degenerate Priests whom he, with Pharaoh's aid, induced to declare the Season for agricultural operations accurately throughout 7 years, he was enabled to ensure the people bumper crops, while he bought in the surplus corn, etc., at very low prices, and stored it to thereby force the relatively high prices he was enabled to charge during the next 7 years of famine he incurred by reducing crops artificially through inducing the Priests to declare the seasons in wrong months.

Thus "by cornering the market"—not as Leiter and other base bleeders of industrious people have recently done, to the detriment of humanity—but to rid the Egyptian toilers from the incubus of extortionate money-lenders who were by usury grinding their beholden farmers down into servitude, Joseph schemed and carried into effect that noble plan by which he used the money derived from the sale of the high-priced corn during the 7 years of artificial famine, to buy up for the nation the thus depreciated land at its lowest price, and thereafter establish for the Egyptians that most just and helpful system of state-tenancy of land, which Genesis XLVII, v. 26, records, *"Joseph made it a law over the land of Egypt unto this day, that Pharaoh should have the fifth part (of the produce as rent), except the land of the Priests only, which became not Pharaoh's."*

The priests alone were allowed to retain their land, as the reward for loyalty to Joseph's scheme and the secret help they were able to give, through being the sacred heralds upon whose fidelity the people (without any other calendar guide) depended for timely calendar declarations to direct seasonal agricultural work, as proved by verse 22, which reads, *"Only the land of the priests bought he not; for the priests had a portion (of corn, etc.) assigned to them of Pharaoh, and did eat their portion which Pharaoh gave them; wherefore they sold not their lands."*

We need not wonder that "the thing was good in the eyes of Pharaoh" (XLI, v. 37), as by the scheme so plainly indicated by the priestly duplications in

Pharaoh's dream, Joseph first ensured 7 years of surplus food he stored for use during the famine, before inducing the priests to purposely direct the times for sowing, etc., one or more moon's wrong (when none outside of the priesthood could detect), during the 7 years of wrong season crops thus greatly reduced, causing the famines, to accomplish Joseph's purpose. By that every Egyptian was brought to regard Pharaoh as the noble monarch, to whom they owed everything, including their lives saved by his and Joseph's foresight in storing food.

They were thenceforth glad to unite in what really was a co-partnership that resultantly bound the nation together, as the royal landlord mutually sharing in the prosperity of the Nation's Agricultural Tenants, who were the strongest possible backbone of Egyptian life—as farmers have ever been in every permanently prosperous nation.

As such they became rightly safe-guarded by just and liberal government efforts nobly directed to always assure farmers and workers, that however abundant crops they produced, their Economic Rent (including taxes) would justly remain only one-fifth of the value derived from the nation's land, through which neither speculators nor usurers could inflict any of the cruel handicaps now imposed upon farmers.

That uprooted the ruinous speculative and usury methods which have ruined some civilizations and blighted others, but benefitted none in reality, by their extortions.

After forty years study of the operations of the land systems of Europe and America the writer considers that the most beneficial land system humanity has ever known was the one-fifth part of the value produced (here termed "Economic Rent") Joseph designed under such ideal conditions, that if any lazy tenant failed to work his land efficiently it "reverted to the nation" (represented by Pharaoh) and was promptly available to be granted for productive use to the next better man available.

That admirably established system provided the best possible incentive for every family and colony to fully develop their permanently rented lots of Land, Quarries, Mines, etc., which, so long as they were worked consistent with the public interest, were as secure to them as land purchased or "pre-empted" from American governments.

Land Benefits Joseph Derived by Re-gearing the Calendar

It further promptly won for Egypt that greatest possible national advantage, of being able to reward by promoting the best working families and colonies (whether formed by groups of either sex or mutually or arbitrarily selected) to the more productive Lands, Quarries, etc., vacated by deaths or forfeitures, so that the most worthy families and colonies prospered best.

The natural result enkindled the ennobling spirit of admiration and emulation in friends and neighbors, who observed those excellent examples—just as school children, college graduates, and adults with well-ordered minds, profit by appreciating the successful accomplishment of persons who produce the best results.

If ancient Joseph, after 3600 years, could now review the highly dangerous speculative developments in the Natural Resources of such recently settled countries as the northwest of the United States and Canada (especially in British Columbia) he would deplore that greatest scourge of our civilization now relentlessly levering up the Cost of Living throughout America and Europe—through the lack of that simple but most effective "*Power of Reversion to the Nation*" of Land or other such Natural Resources as Minerals, Timber, Water-power, etc., when not used in the rightful interests of the nation.

If excessive "Equatorial Rains" caused the Nile to overflow and ruin part of their 3rd crop on the higher "sharake" fields—or extraordinary heat through "Sunspots" diminish crops beyond the control of farmers—then that "Economic Rent" of one-fifth the value derived from the nation's land, automatically reduced that Rent and Tax Charge, rightly giving timely relief—without imposing on loyal workers the indignity of having to ask for that simple justice—but happily sharing mutually during adversity and prosperity, thus preventing usurers and legal abusers from handicapping poor Farmers laboring under misfortune.

The like mutual sharing in both prosperity and adversity applied to their flocks, herds, poultry, etc. In abundant seasons the Government got the 5th part and accumulated the safe-guarding surplus for relief during seasons when misfortunes by the spread of disease, drought or accident befel worthy farmers.

If workers homes were destroyed by fire

or earthquakes, that just "economic rent" system afforded like relief.

But most beneficial of all for Egypt was the ever-watchful care of Joseph's administration through Pharaoh, thereafter exercised to ensure prompt and right Calendar directions, to ensure agricultural and other work being done in due season, to enhance the prosperity and happiness of all.

We may realize the feasibility of that scheme Joseph so beneficially imposed on the illiterate people in Egypt, when we recall the fact that no calendar information was available to guide agriculture, except by priestly declarations; and the further fact that about 1600 years later, far worse trickery was practised upon the masses of the people of the great Roman Empire, necessitating Julius Caesar's Reform of their Calendar in the year 46 B. C.; when he found the Roman Calendar was drifted about 3 months out of gear with the seasons. The pre-Christian Pontiffs had pandered to some powerful military provincial governors, who, to graft an extra month' taxes for personal gain, bribed the Calendar-declaring Pontiffs, to herald in the 13th moon (month) more frequently than every 3rd year, to which it naturally should have been added, because there are about 12 and one-third moons comprised in one Solar year, or 37 moons in 3 years.

The fact of the then Egyptian civil year being drifted through all Seasons of a series of 1460 years, provided further cover for Joseph's scheme through its being developed during the "Sothic Period" of 1460 sacred or full years of observation, during which $365\frac{1}{4} \times 4 = 1461$ of the then Egyptian Civil Years of 365 days each (without any Leap-day adjustment) elapsed between the celebrated occasions when the Sothic Star, "Sirius," rose just before the Sun on the 1st day of the month Thoth—the Egyptian Civil New Year's Day.

According to Michell's "Egyptian Year," p. 30, that "Sothic Period" ended in B. C. 1322. Thence the writer deduces that it began B. C. 2782 (more than 1,000 years before Joseph's system was devised about B. C. 1715) and probably about 500 years after the descendants of the Great Pyramid's founders had discovered and so far developed Astronomy of the Fixed Stars, by the simple means of direct obser-

How the Sphinx and Pyramid Were Used

vation pointed by that pyramid's Apex—as indicated on end-plates "T" and "U"—that their local priests in distant Temples were secretly enabled to note that Sothic sun-rise point of the true year.

We should bear in mind that shortly before Joseph's Time, Egypt was conquered and oppressed by the savage hordes the Egyptians later recorded in derision as "Shepherd Kings," who probably killed the Pyramid Priests, whose secret Calendar knowledge probably died with them.

Further we note that the Hebrew priest-hood writers of Genesis and Exodus were incensed by the Egyptian oppression of their ancestors descended from Joseph and his brethren during the reign of later Pharaohs who (vide Exodus I, v. 8) *knew not Joseph*—consequently they did not record the many good features of Egyptian civil affairs.

Some idea of the marvels of utility developed by the long preceding Egyptian pyramid-builders may be gathered from the following outline disclosing the great Calendar directing purpose for which they erected those greatest structures mankind have built—the Pyramids of Egypt, before which the Sphinx was apparently used.

The Sphinx typifies the earliest "amplitude" method of tracing the seasons in order that every year the proper dates for tilling and sowing might be exactly located. A mistake of a week or more would mean the failure of one crop, which was a serious disaster in the thickly-peopled Nile Valley. The data could be derived by standing at the rear of the Sphinx and using its Asp like a rifle sight for noting the exact position of the sun as it rose between the points of a range of hills on the other side of the Nile Valley. In order to render the observation as accurate as possible the most essential 3 pillars, or socket-holes for "sighting staffs," would inevitably be located on the higher rear-ground, as indicated by W. E. and S. on Front-plate "J." The pointed Asp above the Sphinx-brow served as the "pivot-point" to fix the sighting-line from those rear-points to the 3 season-dividing sun-rise-points, as readers can easily see by watching how the seconds-pointer on a watch guides our sight more distinctly from the pointer's rear-extension, across the fixed pivot, to the long point's tip when pointing to the vertical 12, indicating noon, which divides our days equally, like the sun-rise point on the Sphinx's Eastern horizon at the Equinoxes divides the Seasons equally, *vide* Plate "C."

The Great Pyramid is the acme of the "meridian" method by which the greatest of the ancient nations searched out the precise limits of the seasons. They did that by measuring the varying seasonal lengths of the shadow thrown by the pyramid along the meridian line, as on Plate 5 the almanak-makers of Sarawak are shown measuring that noon-shadow cast by the gnomon pole still used by scattered races. But to feed Egypt's dense population, from crops grown on the narrow areas adjoining the Nile, needed such intensive agriculture that generations of Egyptians were impelled to build pyramids as the only structures they could erect high enough to record precise days by shadows—then used as the best guide to direct most vital efforts and ensure national food supplies—as explained on Fore-plates "J, 1 and 2."

The stupendous labors of the pyramid builders, which today cause wonder and amazement, were more necessary to secure Egyptian food supply than the building of the navy in our generation is needed to insure the food supply of the British people.

THE SIGNIFICANCE OF PYRAMID SHADOWS

1.

Owing to the varying movements of the sun towards its highest and lowest points in the noonday sky during the 4 seasons of the year, the shadow of a pyramid has two extreme limits, namely, when the shadow is longest at noon and when it is shortest at noon. These limits mark mid-winter and the equinoxes. Before the spring equinox when the sun is midway towards its highest point, the shadow shortens about four feet every noon. After the autumnal equinox the shadow reappears and begins to lengthen about four feet more every day at noon. This rate of increase in the length of the shadow diminishes in October and is further curtailed in November, and finally the shadow reaches its extreme length on the *shortest day*, December 22.

When the pyramids were built five thousand years ago, the shortest shadow apparently fell about the Equinoctial Day, March 21, when history records that the ancient Egyptian year began, but if the Slope was not then truly Equinoctial, the pyramid's New Year's Day may have been earlier, though it is almost incredible that the Pyramid Priests could have missed that central point of Astronomy, "*the 1st point of Aries*," from which the Astronomic year has always been reckoned since the Evolution of Meridian Astronomy began.

The Pyramid's secret Shadow-rods disclose its Calendar-recording Purposes

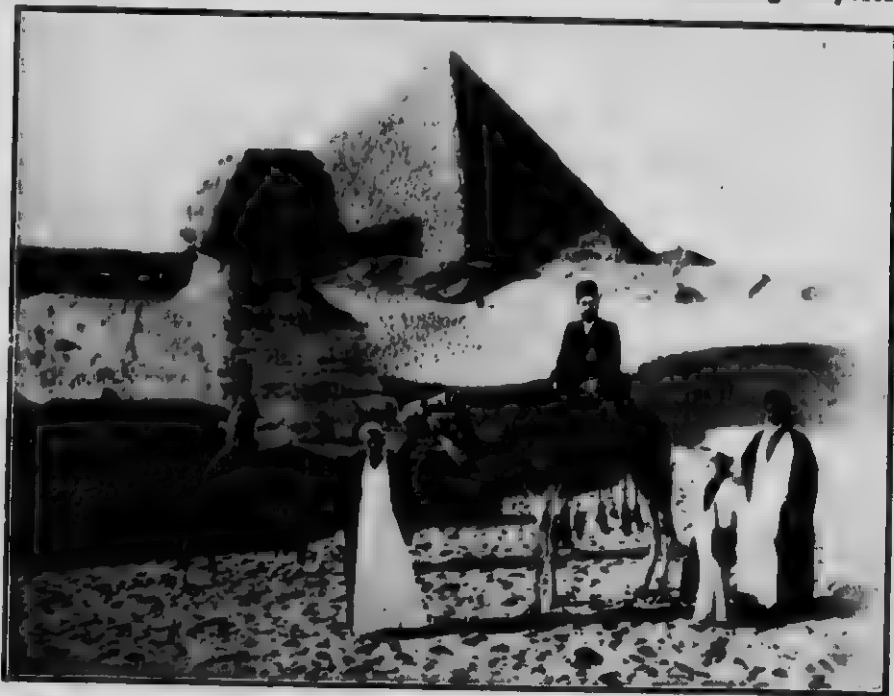


Plate 1. The Great Pyramid and the Sphinx, marking the birthplace of our Almanak and Calendar. These huge structures are regarded with curious awe by the twentieth-century tourists, and are generally supposed to be merely stupendous monuments and tombs of ancient rulers of Egypt. They are really the greatest instruments of their kind used to establish and keep a correct yearly record of the seasons. They were built so that "seed time and harvest may not fail." Note the triangular shadow on the pyramid's light side; for its use see paragraph 3. The Arris-ridges, from corners to Apex, enabled observers to trace the courses of the Stars.

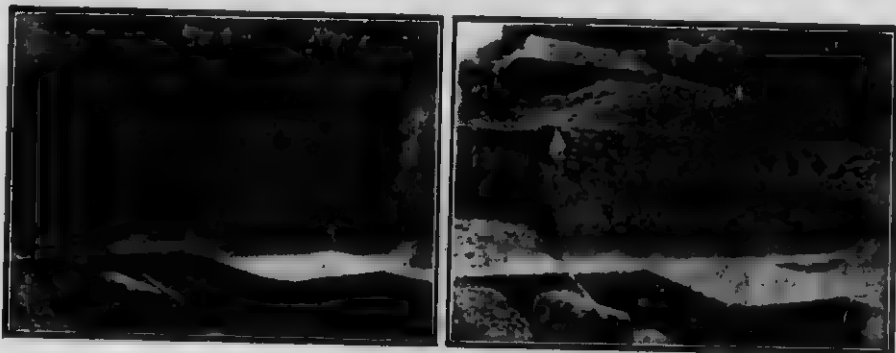


Plate 2. These photographs were taken on a consecutive days in March, at the foot of the Great Pyramid, to illustrate the use of the "meridian rod" for marking the length of the shadow at noon each day. Note the pebbles one foot apart on the rod to photograph the varying length of the pyramid's shadow from the mid-foot of the Northern Slope, which before next noon had "swallowed its own Shadow," (as did "Aaron's Rod" and the like "Rods" of the Egyptian magicians when thus used). The adjoining picture proves by the absence of shadow on the rod, that the Sun had risen above the Slope and so had begun that Pyramid's "New Year."

These rods were removable in order that the priests could preserve the mystery surrounding the science of Almanak-making. This mystery led the people to regard with reverential fear the priests who prescribed the seasons. To be buried in the mysterious pyramids was an honor reserved for the greatest men, as we bury our greatest in cathedrals and around sacred places.

An examination of End-Plates N and P will show that the daily elevation of the Sun to a higher noon-point in the sky towards the Spring Equinox shortens the shadow of the pyramid about four feet each day. That is measured by the 4 shadowed pebbles on the rod, whereon the more than 4 feet long shadow (diagrammed for Spring, 1903, footing End-Plate P) ends where the sunlit part of Ancient Rods marked the white end to be cut off on the "Year-day," when the Pyramid Priest filed the shadowed part for comparison (as per P, Fig. VI) and noted over 1 foot of elongation each 365-day year, followed by the mystic LEAP BACK, over 3 feet in 366-day (Leap) years. Thence the Priests counted days for Calendar purposes.

Practical Use of the Pyramid's Shadows

The natural gauges and data checks displayed on End-Plate "N" prove that even if the Slope was then to the noon-sun a few days earlier, the Egyptian year-ending-noon-shadow would always disappear within 24 hours of the same numbered day's date in each Solar Year, and the next day would always be the pyramid's registered New Year's Day, as Plate "P" demonstrates.

2. While the Egyptian farmer rejoiced in having plenty of work for the myriads of slaves who toiled in the hot sunshine of that fertile and densely-peopled valley, the toilers themselves longed for the hour of the noon-day rest, just like the toilers in every country today. The signal for rest was the shadow of the pyramid at noon. This could be seen by many of them. To others it was recorded by Obelisks or Shadow-staffs, such as that shown on Plate 5, or those on Fore-Plate G and End-Plate M. The toilers in the great railway and other workshops today regard no less gratefully "standard noon time," which is flashed to them by telegraph. This is part of what we spend money on observatories and astronomers for in these modern times. The *correct noon time* has been a most vital factor in the life of the people through all the ages. It must ever be the central point in all astronomy and transactions controlling time in human affairs. But what is more important to both paid workers and slaves is the signal for quitting work, recording the time when they are free to seek the joys of home and rest. That time was evidenced by the triangular shadow of the Second Pyramid shown on the Great Pyramid's East Slope.

3. The interesting feature of that picture is not the author on the camel, nor the mounted policeman, nor the old guide and his attendants. It is that triangular shadow on the Great Pyramid. During 5,000 years that shadow has indicated every day more surely and more extensively than any clock, the precise time for the toilers in the valley of the Nile to leave work. In ancient times the hill of Keswick was used for similar purposes in England, as per End-plate L.

The shadow explains why pyramids were built finally within shadow reach of their less perfect predecessors. While the orientation of pyramids must be governed by the position of the true north, south, east and west points of the compass, they are built in angular relation to each

other so that the time may be displayed by certain shadows being cast on adjacent pyramids, visible daily for many miles around.

4. That shadow was cast by the sun setting west of the Second Pyramid, which is situated a third of a mile away. The photograph was taken towards 6.0 p.m. on the 3rd December, 1900, and could be seen through the clear air of Egypt by thousands of toilers to the southwards of Cairo—vide Fore-plate "J."

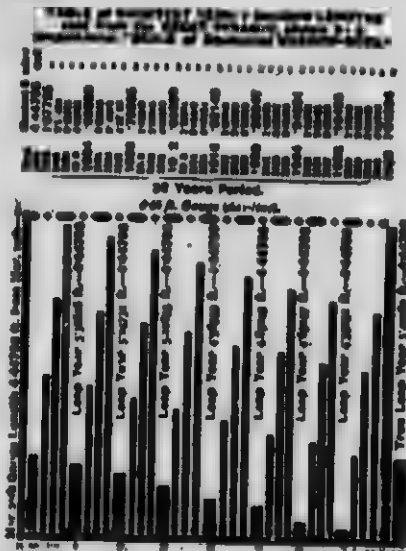
Of the many wonderful sights the writer has been privileged to see in his travels in Europe, Syria, Egypt and America, the most impressive was witnessed just after this photograph was taken. Allee Gabree, the most experienced guide to the pyramid, took us up the broken slope of the Great Pyramid to see the sunset. Glorious as that was seen across scores of miles of the Sahara Desert, it was not so impressive as the vast and rapidly-moving shadow of the pyramid to be seen eastward. It extended for miles, "like the wings of time," so often used symbolically over the doors of Egyptian temples, as depicted on pages 50, 57, 129 and 132 in the "Rational Almanak" and condensed in part on End-Plate O. There we saw this wonderful shadow flitting from point to point at railway speed over sand dunes, palm trees and river as its wing was deflected by the sinking sun.

5. The contrast between our puny shadows and the vast shadow-wing cast by the Great Pyramid under our feet disclosed why the pyramids were built to such enormous heights. After most strenuous and protracted labor, Egyptians built nearly seventy pyramids before they perfected the Great Pyramid as their final Almanak recorder. By these they wrested from their living sun-god, "Ra," the mystery of the varying seasons. To them he appeared to control their lives by rising to the meridian, and lowering to the horizon each day. His priests measured the daily variations in length as each noon's shadow crossed that equating line of astronomy, the meridian (vide Plates 2 and 5). By cutting off shadow rods at the shadow's edge and preserving them for comparison during the equinoxes of each year, and counting the days in months between, those early astronomers first revealed to humanity the length of the year.

* "The Rational Almanak": 2s. 6d. post free. M. B. Cotworth, New Westminster, B. C.

Measuring the Calendar of Days by Shadows on the Meridian

They later gradually developed the Almanak by counting the days between each final disappearance of the noon-shadow in March and its reappearance in September, when measurements would be resumed, each noon-shadow's tip marking the location of its day in the six Winter-months.

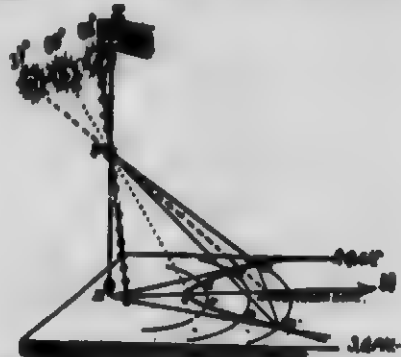


3' 6 days + the fractional day length of the rod as leap year's length.
 6' 6 days + the fractional day length of the rod as ordinary year's length.
 End-Plate "P" diagrams 10 years' shadows.

At the winter solstice, the lowest point of the sun in the noonday sky, the Egyptians invoked their god not to sink any lower as they were afraid he would forsake them altogether. It will be obvious what an opportunity was presented to the priests to impress the religious aspect of their work on the simple minds of the people. The ancient Chinese had a similar fear at that time of the year, but they thought the sun was being pulled down by devils, whom they tried to scare away by beating gongs, letting off firecrackers and making noises.

6. In addition to finding the length of the year and the order of the seasons, the priests of Ra, the sun-god, had to record the varying lengths of the days. The meridian line extended north from the centre of the base of every pyramid, obelisk or pole, to locate the yearly position of the day and its length as indicated by their daily and yearly observations. These observations were made on the "shadow floor," and over the Arris-ridges cornering and uniting the Pyramid's 4 slopes.

The mid-day N.W. and N.E. shadows could only be cast from a π pyramid near Cairo during the six Winter months, when the N.W. and N.E. "arris-ridges" would both be brought into play thrice daily, but during the Summer each ridge would only cast its "arris-line" shadow during morning and evening of each day.



EXPERIMENTAL DIAGRAM for contrasting PYRAMID "ARRIS-LINE-DEFLECTED" SUN-SHADOWS, with a corresponding "uninterrupted" EQUINOXIAL DAY'S SHADOW-TRACK from a SUSPENDED GLOBE.

The above symmetrical elliptic curve on the shadow floor outlines the path of the Apex-pointed tip of the Great Pyramid's shadow between 9.0 a.m. and 3.0 p.m. on the Equinoctial Day, when it was shortest as the Sun crossed the sky-meridian at E , foreshortening the shadow's tip to "e" as it crossed the floor-meridian-line on the day the Sun crossed the Pyramid's indicated Equator, thus marking its "1st point of Aries" as the day beginning their "New Year."

For Mid-summer noon the $8\frac{1}{2}^\circ$ chained line S to "e" shows the angle of the Obelisk's shadow—and the lowest 37° angle W to "w" indicates the longest noon length for the Mid-winter shadow measured on the meridian line.

The Sun's Equinoctial Elevation of 60° (indicated by the "dotted line") demonstrates the 30° latitude of the Great Pyramid's location by the 30° complementary angle E, P, Z , between the vertical 90° of the Zenith's "Z" and the Equinoctial line "E" that determined the pyramid's slope.

The beautifully-levelled shadow floor of that famous observatory temple, the Great Pyramid, is splendidly preserved under the accumulated debris of 4,000 years. Plate 2, showing photographs taken on consecutive days, shows how the shadows varied from day to day at noontide. In March as the final shadows approached the pyramid they shortened by more than four feet each day, and after the autumnal equinox the shadows lengthened about 4 feet per day. In each recurring year these phenomena indicated the approach of summer and winter.

Pharaoh and the Priests of "Ra" Heralded the Seasons

It is significant that at the instant of noon, when the shadows were measured by the priests of Ra, then began the Egyptian noon-time of prayer. Noon is still the pivotal universal time for beginning astronomical "days."

After the passing of Mid-winter the shadows began to show faint signs of steadily shortening. Then came the lengthening days, full of promise to the worshippers of "Ra."



Plate 3. Pharaoh with his queen and children distributing gifts of life, power, knowledge of the seasons, etc., direct to his people, as received from their living sun-god.

The sun is pictured as handing down first the ten days (five counted on each hand) of the ancient "decade," a trinity (three) of which constituted their uniform months of thirty days each—used until the end of the year, when another "hand" of five days was added.

We next notice that the longest rays from the centre of the sun reach down around Pharaoh's body till they clasp his heart to keep him wholeheartedly for God, and avoid the great danger of selfishness.

The source of life in the sun is denoted by the loop-key "emblem of life" appended below the disk. Lower down the sun's ray-like banners are conferring that gift of life upon Pharaoh and his queen, who, reaching them downwards to the people, graciously pass on the horseshoe-like "gift-rings of Menes" to the Egyptians, irrespective of rank or caste. The legend inscribed on those rings as a daily reminder always was: "The sun-god of the two solar mountains—the east (sunrise) and the west (sunset)—whose name is the darter of beams and who lives in the disk of the sun, daily watching in love over the children of men."

7. Pharaoh was the High Priest of Ra and the King of the Egyptians. He was regarded as the only medium through whom Ra distributed his blessings. Plate 3 illustrates the position Pharaoh held in relation

to the sun in the minds of worshippers of Ra, to whom the Priests heralded such Calendar essentials as those condensed on the Egyptian Calendar's agricultural notes facing page 1, periodically announcing each, sufficient days in advance, to locate:

(a) When to prepare their land in advance for sowing rice and other crops needing preparation before the Inundation.

(b) The best dates upon which to sow each of the numerous varieties of crops

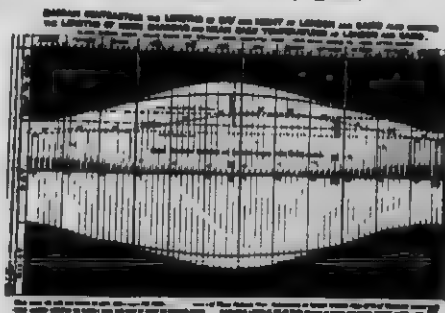
(c) The seasonal dates on which to mate camels, cattle, sheep, goats and other live stock.

(d) Such further information as is yearly printed on the present Egyptian Calendar for Agricultural, Festival, Civic and National purposes.

Pharaoh is here pictured with his family as receiving direct from the sun the gifts that he distributed to his subjects. The rays which reach down and embrace the figures symbolize the direct benefits the Sun-God "Ra" conferred on Egyptians through Pharaoh.

Pharaohs then were like the present rulers of Abyssinia and Persia. Their title of "Shadow of God, Centre of the Universe," and the sun on their royal standards indicate a surviving idea of rulers receiving life and season knowledge from the sun.

There was more fervency and full-souled worship among the Egyptians than among any other sun-worshippers. The following inscription was taken from under a representation of the symbol shown in Plate 3. It appears in a tomb or hallowed resting-place at El Amarna, and reads: "Thou shinest, O! Lord beneficent, the Sun King, giving life for ever and ever, even the living disk of the Sun. No guide goes before Thee: when Thou emittest Thy beams all eyes see clearly. Now Thou art rising, O! King, from the mountains of the East to make perfect the lives of man, bird and beast. All things in the world glorify Thee; they are made strong by Thy gifts," etc.



Druidical Circles Erected to Regulate Ancient British Calendars



Plate 4. Druidical stone circle near Keswick, England, used in ancient days to trace the seasonal movements of the sun and moon for the purpose of constructing Druid Almanaks. The most famous of these mysterious circles is, of course, the one at Stonehenge on Salisbury Plain. In this connection again the methods of locating "seed time and harvest" for the common good were associated with religious ceremonies. The Druids' festivals with their sacrifices and processions, in which the sacred mistletoe was utilized, were a ritual that grew up about the task of studying the seasons. The Druids, like the Egyptian priests of Ra, the Sun-God, were primarily astronomers, who grew to occupy a mystic place in the imaginations and thoughts of the people, who made them a class apart and invested them with the attributes of priesthood and rulership. They used the "Amplitude Methods" depicted on Fore-Plates C, D, E and F, using the pointed stone tips across opposite sides of the circle (with the centre as its pivot-point) to locate the Seasonal Sun-rise and Sun-set points, as the ancient Sphinx observers did in Egypt, vide fore-plate "J." The Druidic observatories usually consisted of 30 stones (typical) in a circle representing a practical fixed model of the horizon circle's limit of vision to locate the seasonal positions of the Sun on the horizon—for calendar purposes to aid agriculture and public welfare.



The ANCIENT DRUIDICAL OBSERVATORY TEMPLE at
STONEHENGE (ENGLAND)

Probable Calendar Origin of the "North and South Poles"

Had the unknown person who wrote those words, "strange religion," known more of the practical lives and useful culture of the Ancient Druids, that phrase would have been better described as the "Legislative-Assemblage" of the rulers and leaders of thought in Ancient Britain.

This representation of Stonehenge during the great Mid-summer Festival of the Druids on June 21st, about 3,600 years ago (as evidenced by Front-plate F illustrating its present condition) is intended to convey some idea of that very early center of Ancient British government and culture, as the Arch-Druid led the procession into the ceremonial enclosure.

The blazing Sun heading the Serpent, together with the Moon and emblem cluster representing the Stars, indicate the vital year-recording-purpose of that marvellous erection of huge stone pillars conjoined by the raised horizontal stones forming that remarkable "Elevated Circle," which the writer submits was astronomically used to measure off sections of the starry dome of night by thus contracted and localized star horizons, as Eratosthenes the Egypto-Greek Astronomer at Alexandria, about 250 B.C., similarly used the elevated horizon of the Armillary Sphere he invented (as illustrated below) and thereby extended Astronomical Science, and made the first measurement of the Earth, vide Fore-plate "J1."

The engraver of that old print, evidently through lack of knowledge, omitted the high Star-sighting Pole, also used as a shadow deflector, upheld by the Grooved-stone as Dr. Eddowes of London proved per "R. A. 291."

The shorter pole (apparently crowned with summer foliage like the May-pole) may represent the "North Pole" that registered the North direction of the "Floor Meridian Line" as per Fore-plates D and G, by which the Mid-day Shadow from the higher "South Pole" divided the hours of the Day as per End-plate "M."

Those mast-like Poles have long since decayed, and been forgotten in the hoary ages of the past, like the 2 reverse coiled serpent signs, which probably typified 2 competing cults of priests, the 1st locating its Seasons and Festivals by the "clock-wise" direction of the Sun and Zodiacal Stars, while the less exacting College of Priests in that Primeval University at Stonehenge apparently used the more obvious reverse method indicated by the "Twin-pointers" on Nature's "Polar Clock in the Sky."



The ARMILLARY SPHERE, as used by Eratosthenes, who made the first measurements of the Earth (vide Map on Fore-plate J1) by a combination of Elevated Circles like this.

Although some superficially educated persons affect to scoff at the idea of such an instrument being useful, the fact is that Eratosthenes thereby discovered the distance between the Tropics, and made great advances in Astronomy.

The Armillary Sphere, representing the great circles of the Celestial heavens, thence became extremely useful to early navigators, especially when they had a fair-sized celestial-globe representing the Earth in the centre, on which were depicted the Principal Stars visible to the naked eye. Then the outer sphere for celestial circles could be turned to suit any Latitude and Meridian near which the "fixed-stars" of prominence used by navigators could be located, at the precise Seasons and times of night, as may be seen indicated herein by the 4 Seasonal Star Maps of the visible heavens, with their appended Time-Table for each night, thence Calendared throughout the Year.



ELEVATED STONE-CIRCLE near BAALBECK
in SYRIA

Practical Use of Druidical Elevated-Stone-Circles—Arctic Ice-cap Moving.

This photograph, taken by the writer in the year 1900 while investigating the wonderful Ancient Temples to the Sun and "Baal" near which it was apparently erected about the time of Christ, illustrates the advantage of the elevated horizontal circle, which the writer's personal observations at such Druidical Observatories and Stone Circles in different parts of the World lead him to conclude were erected to establish the then necessary "above-ground-horizon-gauge" to more accurately register the Seasons by "sighting" the prominent Stars diagonally across the circle, at an elevation as far as practicable clear of the low-land fogs and mists which obstructed the lower "risings and settings" of Nature's Calendar-indicators—the Sun and Stars.

The "elevated circle" also enabled the priestly observers to use that sighting-plane to better locate the precise times of transit of the Sun at Sunrise, Noon and Sunset, also of the Calendar's chief date-locating Stars of 1st magnitude, over the edge of that truer Observatory circle, to the thus more equal and definitely registered Calendar points, along and above the thence better observed horizon and meridian.

The priests could further use the high-pole so erected in the enclosure that its top, like the one used by the Pyramid builders, located the Pole-Star when viewed from the South-point on the edge of that elevated circle, and thus with approximate accuracy fix the North-line of the Meridian, past which the ever cycling Circumpolar Stars each clear night ticked off the passing Calendar-day, as registered by the nightly 4 minutes precession of the twin-directing "Pointer-Stars" I have arrowed both to the Pole-Star and their outer Calendar locating dial-dates, on the Intermediate Calendar Basis diagrammed as "The Polar Clock in the Sky."

That higher plane for Horizon-use of the Elevated-Circle seems conclusively evidenced by the low crescent arches, so superposed above the 8 orientated sides of the Elevated-horizon-gauge, that vertical rods or sharp-pointed indicators could be inserted therein, to establish fixed horizontal sighting diameters as "Sighting-line-direction-marks" projecting the line of observation across from the peep-holes on opposite sides of that "Elevated-Circle," and thereby locate the "Rising and Setting Points" for both the Sun and Stars, to thence Calendar the Days throughout the year according to the guiding data thus acquired.

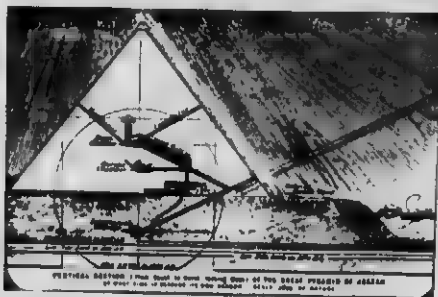
Some of the monoliths and imposts have been shattered and displaced by earthquakes.

8. The earlier tracing of Seasons by Sunrise, as typified on Fore-plate J. by the Sphinx-rays to the hills visible on the east side of the Nile, had its counterpart in other countries. The ancient Mexicans used truncated, orientated pyramids, and the Peruvians "cones," "huacas," etc., to "sight" across their corners and sides the direction of sunrise at each season, to derive their separately acquired Almanak knowledge. The ancient Druids of Europe used stone-circles as observatories for similar season-finding purposes, as pictured in Plate 4 and Front-plates C, D, E, F and J.

9. Beyond all the wonderful and almost incredible results obtained by the Egyptians through their pyramid observations, there were certain unknown factors at work that puzzled and misled them. For instance, as per Front-Plates C, D, E and F, they saw the result of the astronomical movement now known as the Precession of the Equinoxes, but were not acquainted with its cause. It was not until 200 B.C. that Hipparchus differentiated that phenomenon. The Egyptians saw that every cycle of four years the Shortest Shadow leaped back just behind the tip of the "rod" used to measure it 4 years before, and that apparently a day was added to the usual number of 365. It caused the shadow cast by the pyramid to "leap back," as it were, on a certain date a shadow distance equal to one day. This was because the Sun crosses the Equator at different quarters of the Earth on the Equinoctial Day in each year as is now perfectly understood by modern astronomers, as later shown.

10. Geological evidences and recent explorations over Greenland and Alaska, demonstrate the stupendous fact that during the 5,000 years elapsed since the Great Pyramid was built, there has been an incessant removal of the Polar Ice-cap from Alaska towards Greenland by evaporation and redeposit as snow, yearly accumulating countless millions of tons of Glacial Ice, forming the Ice-cap of Greenland, covering almost the whole of that continent to a depth of 9,000 feet. That mass if spread over Europe and North America would be about 500 feet thick. There is nothing to counterpoise it on the Siberian side, hence the gravitation of the world is disturbed by it, so that the latitude of every place is gradually changing and seems further deflected by the preponderance of land around the North Pole as depicted on End-plate R.

DEFLECTION of the PYRAMID'S SLOPE indicates **CHANGING LATITUDE**, and tends to explain why older pyramids became defective, and an adjusting series was built.



MID-NORTH-TO-SOUTH-SECTION of the **GREAT PYRAMID**, showing the Sun's wide-spread-rays completely consuming all shadows, at noon on the Ancient Equinoctial Day. The later inset Sun is represented as casting a divergent beam down the North Slope to contrast the

present increased Altitude of the Sun when Day and Night are equal.

That divergence now appears to evidence changing Latitude and account for that Deflection of the Pyramid's Slope from the Equinoctial Sun, which prevented so many intervening generations of awe-inspired dwellers around, and visitors to the Pyramids, from understanding the highly practical and beneficial purposes for which the able and worthy Pyramid-builders designed and tolled—primarily to Calendar Days and Seasons to grow more food, also to locate the points of the compass, hours of Time, and like astronomical and practical every-day knowledge, upon which our civilization has been securely built.

As that Deflection of the Pyramid's Slope seems to disclose the first and most reliable index-measure of the Earth's greatest movement now changing the climates and vitalities of leading Nations, it seems my duty to here insert plates (a), (b) and (c) to enable scientific readers to realize how that Deflection of the Slope may have been caused—especially as the Astronomical Evidences in Egypt point conclusively to the fact that the Equinoctial Apex-pointing-slope then pointed to that most central point (1st point of Aries) in Astronomy, as the pivotal equal-dividing indicator for Nature's Year, during the Pyramid Era.



Plate (a). The black areas upon the above chart of Glacier Bay, Alaska, show the areas which, though covered by Glacial ice of very great thickness when the Alaska Boundary Commission surveyed around Glacier Bay during the years mid-dating 1890, were found to be bare of ice in the year 1907, having melted back at the wonderful rate of about half-a-mile per year, releasing about 2,054 acres per year from

Glacial ice. Both the "Muir" and the "Grand Pacific" glaciers receded at the rate of about eight-and-a-half miles during those seventeen years.

Other glaciers varied slightly where mountains shielded the ice from direct rays of the Sun.

The dotted lines marking the old positions of the edge of the ice as recorded in the years 1794, 1810 and 1882, demonstrate the long retreat of these glaciers, evidencing changing climate, by continuous melting back.

RECESSION OF GLACIERS indicates CHANGING CLIMATE and LATITUDE.

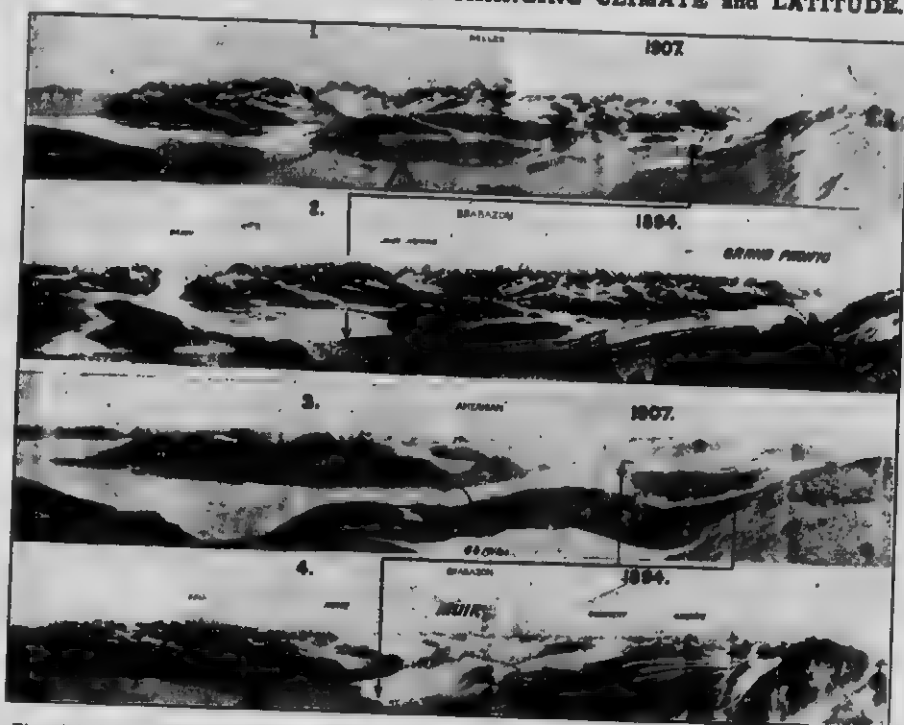


Plate (b). Photographic proof of the recession of the Grand Pacific and Muir glaciers between 1894 and 1907. These photos, ranging about 20 miles long, were taken by both the United States and Canadian surveyors independently. They establish the fact that their combined ice-fronts, then about 1,000 feet thick,

have melted back, uncovering about 2,000 acres per year. The enormous weight of ice thus yearly moved seems about a thousand times greater, as the whole Alaskan Ice-cap is being thinned down by evaporation. The lower berging edge of the Muir Glacier was about 400 feet above the water and much more below.



Plate (c). Map of the Glaciated Areas in North America and Europe, from Professor Geo. F. Wright's book, "Man and the Glacial Period," amplified to show progression of the Pole.

The large square cross I have inserted to the East of the present position of the North Pole approximately locates where the Pole was about 5,000 years ago, as indicated by the Slope of the Great Pyramid in Egypt, which appears to have been deflected from the Ancient Equinoctial Angle by the World's lopsided stupendous weight of 500,000 square miles of Polar ice about 9,000 feet thick, now in Greenland,

very slowly gravitating the Earth's crust around its dense centrifugally-balanced core. That erratically changed the Latitudes and Climates of the World during Geological Ages, as the much older Polar-ice-sheet formerly covering Northwest America slowly melted down, being moved by evaporation and air currents towards Greenland, as explained on pages 210 to 251 of my "Rational Almanac." The thick heart-shaped curve I added, traces backwards from the Pole the apparent course of Polar progression, as indicated 23½ degrees North of the arrow-indicated edges of the older moving Polar-ice-sheets' southern moraines.

Further proofs may be found in my pamphlet, "The Glacial Cause of Changing Climates"

Almanak-makers of Sarawak Locating Seasons by Shadows on the Meridian

We have evidence of this change in the careful observations of Eratosthenes, who about 276 B. C. recorded the fact that Syene (now Assouan) was directly under the Tropic of Cancer. It now appears to be some miles from that tropic (see *Encyclopaedia Britannica*, Vol. 2, Page 748).

The pyramid's fixed slope is the best possible permanent register of ancient astronomical evidence of that changing latitude by which our beneficent Creator rests and renews the varying zones of climate all over the earth.

Geologists in every nation are yearly finding such increasing proofs of that ever varying change, that will soon convince leading scientists of its reality, as indicated in my paper read before the British Association on "The Continuous Glacial Period."

11. These causes indicated on Plate "R" affected the relative slope of the pyramid to the noonday angle of the sun at the equinox. For example, when the so-called Second Pyramid was built, this angle was 52 degrees 20 minutes. Other older pyramids were deflected still more. These causes have deflected the shadows from the fixed slope of the Great Pyramid, so that the shortest noon shadow registering on March 21 about 5,000 years ago now falls early in March. That deflection has until recently prevented the re-discovery of the great and noble purposes for which the pyramids of Egypt were built.



Plate 9. Almanak-makers of Sarawak. These

men are measuring the varying shadow thrown by the pole shown in the photograph. They make a business of supplying information which we find in our modern calendars ready-made, as it were. This pole is used as a gnomon, and left fixed in the ground. The "Clog" the man is holding he will take away because cut upon it are secret notch measured lengths of noon-shadows for certain seasons. At those notch lengths pegs are driven and left in the ground so that farmers may see, by the lengths of the passing noon-shadows, when to till their land, sow, etc. The photo was taken by Dr. Hose. The men are ascertaining the approximate dates most profitable for sowing rice and maize.

This method is still used in Africa and remote parts of the world. End-Plate M proves that it was used in Egypt and England during the 18th Century. The "Traveller's Staff" known as "Aaron's Rod" was thus used in conjunction with Calendars which had the daily lengths of shadows printed, as on Plate III of End-plate "M." The Meridian "Clog" thus naturally developed into the "Clog Almanak."

12. Plate 5 shows the calendar-makers of Sarawak at work and typically illustrates the methods by which our ancestors developed their systems of daily and yearly time during thousands of years. This method was perfected by the stupendous labors of the Egyptians in building the pyramids 60 times higher to calendar all days by 60 times longer shadows.

This 8-ft. pole is only a crude guide to within 2 weeks of any date. Owing to their unexcelled knowledge of the true location of the seasons, the Egyptians prospered above all other races of antiquity. They had learned the secret of when to sow each kind of seed and multiply their crops. Thenceforward there was always "corn in Egypt."

The most useful dates for sowing different seeds, mating various livestock on farms, holding festivals, etc., were very gradually tabulated by the Priests as the sacred "Mystic Tablets," which were cautiously extended to the double paged (Diptych) Tablets—as similarly used by early Christians during the 1st Century.—Those were later extended to the 3 paged "triptychs" having an inner leaf for fuller records of Agricultural and Festival Dates, until the 4 sided "Clog Almanaks" were developed, recording the 4 seasons as Quarters of the year, carved upon their respective sides of the "Clog," as shown on the later Clog Almanak page.

Some of the "Literati" later expanded such records, into book-form "calendars."

Meantime the nomadic and semi-settled communities of Northern Europe, Asia and America, continued to use the crude stick-counts, notched-sticks and Druidical Calendars, as they attained by various stages to more practical knowledge concerning uses of Seasons of the year, the Egyptians used best.

Solution of Star Astronomy Discovered by Pyramid Astronomers

13. After compiling reliable calendars by means of shadow astronomy, the pyramid-builders found they possessed the key to a more accurate system of time measurement, namely, star astronomy. They noted the regular cycles of the stars which passed nightly across the apex of the pyramid, tracing an imaginary semi-circle on the background of the night sky over Egypt. Following up this observation, in conjunction with the calendar they had already constructed, they recorded the course of what is now known as the Path of the Ecliptic (so-called because the eclipses of the moon appear in that Equatorial Zone.) The priests marked out the great circle of the Ecliptic by means of twelve constellations or prominent groups of stars about thirty degrees apart, making up the full 360 degrees of the circle. That is depicted on Front-Plate "A," where the proposed new-month "Sol" has been inserted.

Front-Plate A indicates how the North Slope of the Pyramid coincided with the "Angle of the Ecliptic," so that at Equinoctial noons the Apex of the Pyramid pointed direct to the centre of the Sun, when the 1st point of Aries "The Ram" marked "Equal day and night" on the Pyramids' "Year-day" in March.

During the next twelve months the constant slope of the Pyramid by its apex pointed nightly during each month successively to these 12 Zodiacal locating stars:

MONTH	ZODIACAL SIGN	DEGREES
April	Taurus	"The Bull" 30
May	Gemini	"The Twins" .. 60
June	Cancer	"The Crab" 90
July	Leo	"The Lion" 120
August ...	Virgo	"The Virgin" .. 150
September .	Libra	"The Scales" ... 180
October ...	Scorpio	"The Scorpion" .. 210
November .	Sagittarius ...	"The Archer" ... 240
December .	Capricornus ...	"The Goat" 270
January ...	Aquarius	"The Water" 300
February ..	Pisces	"The Fishes" ... 330
March	Aries	"The Ram" 360

Those 360° measures of the year have ever since been conceded and adopted as the best practicable basis for astronomical efforts directed to locate and calendar dates throughout all years, as the globe plate on the next page indicates.

How completely the North Slope and Apex of the pyramid were shaped to plane-off clearly and for every season permanently locate the meridian transits of the Zodiacal Stars, may be seen by the preceding pyramid illustrations, and End-plates "T" and "U," which (so far as space admits) explain how the Egyptian Zodiacal Calendar was derived and subdivided into equal months of 30 days, tri-parted into 3 decads or weeks of 10 days each denoted by the crescent arcs, measuring 10 degrees each, grouped into months denoted by Zodiacal signs, as reproduced on Fore-plate B.

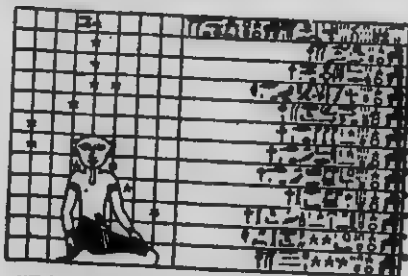
That method of registering stars passing high erections is confirmed by the next illustration, showing the extension of Egyptian astronomy to register the hourly transits of stars over a figure like the Sphinx, which was also probably used in that way, by later cults of Sphinx priests observing from the excavations below the Sphinx breast after the Pyramid shadow method became as obsolete as we now naturally regard the old Sundials used by our grandfathers.

EARLY STUDY of the STARS as a GUIDE to the YEAR.

The systematic study of Star movements would only become practicable after the study of the Sun and Moon's motions were fairly advanced and the N. S. E. and W. fixed directions of observations were settled by pyramid research.

After that, no doubt, the more easily traced observations then seen to be obtainable by the Stars would give greater prominence to astronomy of the Stars, which would thus gradually supersede or lead to be forgotten most of the old Sun and Moon experiments formerly derived through the pyramid.

Accordingly, we find interest in the pyramids waned, and, during later Dynasties, lists of stars such as the following appear recorded in the temples and tombs:—



LIST OF STARS ON THE 16TH OF PAOPHI (1847 L. D. IN MAY)

Ex Erman's "LIFE IN ANCIENT EGYPT."
By Manetho & Co's kind permission.

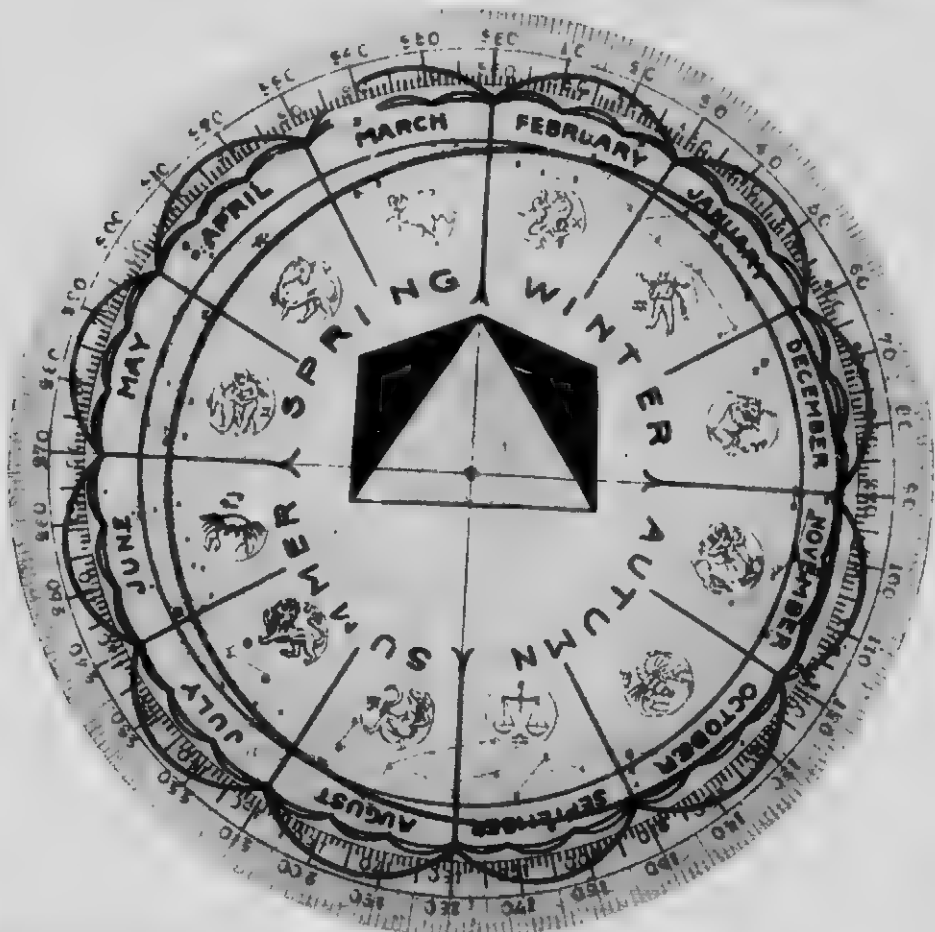
On the 16th of Paophi, for instance, they thus indicated the positions of the stars for each hour:—

Hour	Description	Position
1st	the leg of the giant	over heart.
2nd	the star of Ptolemy	over heart.
3rd	the star of Ary	over left eye.
4th	the claw of the goose	over left eye.
5th	the hindpart	over heart.
6th	the star of thousands	over left eye.
7th	the star of 500	over left eye.
8th	the fingerpoint of the constellation of 500 (Orion)	over left eye.
9th	the star of 500 (Orion)	over left elbow.
10th	the star that follows Sothis	over left elbow.
11th	the fingerpoint of both stars	over right elbow.
12th	the stars of the water	over the heart.

After fifteen days, on the 1st of Athyr, the stars have moved 924 point and recur 1 hour earlier, as proved by charts, maps, etc., on pages 28 to 34.

The above reproduction of the ancient Egyptian diagram of the Stars with descriptive hieroglyphics, indicates most positively that the early Egyptian system of studying the Stars was by noting their hourly positions above and around some huge figure like the Sphinx, so that the varying positions "over eye, heart, elbow, etc.," could be intelligently recorded for different times, and arguments discussed, as well as theories framed therefrom.

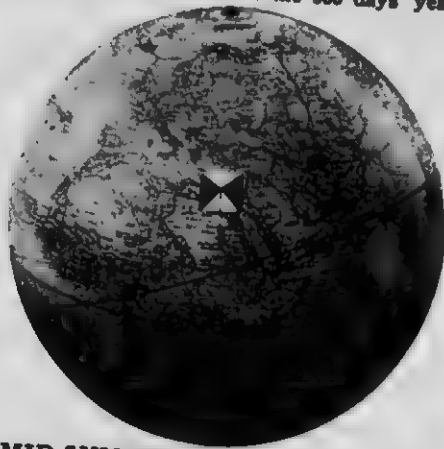
The CALENDAR'S BASIS — The "ZODIACAL CLOCK in the SKY"
as finally evolved by star-recording at the GREAT PYRAMID.



This Southern Star-Clock's Face REVOLVES "clock-wise" as depicted on Fore-plates A and B. The Pyramid's North Slope and Apex FIX its South-Sky-Meridian, across which those stars circle completely round, and "overlap 1 day-cog" more each 24 hours in the 365 days' year.



MID-WINTER DEFLECTION of
the GREAT PYRAMID—FROM the
SUN at NOON on DEC. 22nd



MID-SUMMER INCLINATION of
the GREAT PYRAMID—TO the
SUN at NOON on JUNE 21st

Both globes were photographed with camera levelled to the Equinox, to show both tilts true.

PYRAMID OBSERVATIONS DEVELOPED STAR ASTRONOMY

The large diagram is derived by photographing a model of the Great Pyramid Slope, which, when used to Astronomically cut off the under part of the night-sky-dome, when viewed from the Pyramid's Observatory Entrance (indicated by the hole where the quadrant-lines intersect), registered the Plane of the Ecliptic at the Equinoxes when the Sun crossed the Equator, as per End-plates "T" and "U."

The protractor, sub-divided into 360° on a outer circles, represents the Equinoctial Plane of the Ecliptic when the upper semi-circle of Zodiacal Stars appear to nightly circle across the sky adjoining the Celestial Equator (represented by the inner-circle) followed, unobserved during daylight, by the lower half completing that cycle as the Earth rotates each 24 hours.

But as the Earth also progresses daily over $1/365$ th of its orbit around the Sun, that causes each of those stars to cross the Meridian Apex 4 minutes earlier each 24 hours, so that the whole 360° circle of stars daily moves forward one day's cog, which is almost exactly one degree, as marked on the Outer-circle. Thus Egyptian Observers in 10 days measured 1 of their 3 decades, shown by the triple crescents below each month's combining arc of 30° (days). They are measured backwards on the middle circle, within which, in this case only, names of the months are recorded one month backward, to illustrate the retarding Calendar defect that resulted in diminished crops when the 19th lunar month was intercalated before Pyramid Observers had by their shadow-records located the true length of the Year, and when the Calendar was tampered with prior to Julius Caesar's Reform and during "Joseph's 7 years of Famine." Then March could be held back till the warmer April weather, causing late sowing, delaying and diminishing production throughout later months, except when the astute priests proclaimed the requisite adjustments for each Season as the Chinese do by their elaborately printed Agricultural Calendars.

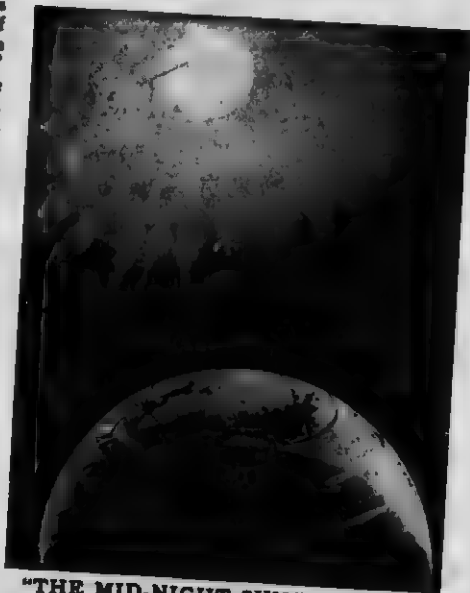
The Zodiacal Stars are indicated and grouped by connecting lines between the Signs of the Zodiac and those crescent arcs. The cog-like, bulged circle intersecting those Constellations has 365 day-cogs along that Yearly circuit register of daily progressions amidst those Fixed Stars, known as the *Path of the Ecliptic*, because opposite each night's observation-sky-point (pointed to by the Pyramid's Apex) the mid-day Sun's position was located as it registered the daily position of the Earth on its yearly circuit around the Sun, as this rotating world in 365 day-stages causes that over-lapping 366th cycle of the Zodiacal Stars which so mystified Ancient observers—but which is now astronomically used by all Modern Nations as the basis of their Calendars to daily tally the progress of days throughout each year.

That circuit is shown as the oblique circle on Standard High-school Globes, and ranges between the Tropics of Cancer and Capricorn, registering throughout the 365 day year the respective daily zenith locations of the Sun where it crosses that "Path" at that locality's noon, according to "Standard Time," measured along the Earth's horizontal Equator by the Meridian scale 15° apart per hour.

Upon one of those Standard Globes I have affixed a model of the Great Pyramid near Cairo, as next illustrated, to show, 1st, its relative angle of inclination to the Sun at Noon in Mid-Winter (December 22nd), when the floor-meridian shadow is longest, and 2nd, the opposite extreme on Mid-summer-day (June 22nd), when the Noon-sun most overlooks the

Northern slope of the Pyramid as it does during the 6 Summer Months between March and Sept.

Below, in order to show that extreme range of length in day and night which was only experienced in part by the great Nations of Antiquity, I have with cordial acknowledgements to the proprietors of the "Illustrated London News" for 13th January, 1914, and to Mr. Scriven Bolton, reproduced his graphic sketch of "The Mid-night Sun," showing the Arctic Circle during its 24 hours of daylight at Mid-summer, whilst the Antarctic is enduring 24 hours of darkness.



"THE MID-NIGHT SUN," as the VIIIth sketch of the "Wonders of the Heavens," by Scriven Bolton, Esq., F.R.A.S.

The 360 degrees "Zodiacal Clock in the Sky," with the 12 Calendar-days range of hour-change recorded below the List of Stars on page 27, indicate how Egyptians measured equal 30-day-months geometrically, by dividing the pyramid-shadow-located Equinoctial Day and Night into 24 hours 15 degrees apart around the Celestial Equator—then a semi-circle arched across the sky by the Sun as 12 hours shadow-registered by Day, followed by the Night's semi-circle of 12 hours timed by "water-clocks" holed to drip 360 drops as "seconds" per hour, to hourly measure the sky-space between Stars passing the summit of that Arch, which the Pyramid's high Meridian Apex enabled the Priests to trace and complete the most divisible Great 360-degrees Circle basis of Astronomy by the Fixed Stars.

Thence they established the very useful fact that those Stars (not the brighter Planets) re-appear in rotation across the Meridian 4 minutes earlier per night, pre-timing one hour in 15 days, thus nearly completing the yearly circuit in 360 days, divided into 12 months, easily tallied as 30 days in 3 decades of 10 days each, depicted as 36 sky-arc-floets on Fore-plate B.

The closing 5 days and fraction of the Astronomical Year's length could be registered by the Priests using secret shadow-rods as per pages 17 and 19 until their system of Star Astronomy was reliably established as superior.

The "POINTER-STARS" nightly TICKING leftwards ROUND the POLE-STAR.
The "7 Stars of the Plough" indicate Nature's 7 days of the week, ever measuring



round 52 weeks as 13 Equal Months, from the Shortest-day. Nature's "CALENDAR-CLOCK in the POLAR SKY" thus ticks off 365 Days in the "Yearal," for all Nations.

This Polar-Sky-Clock's astronomically dated RIM remains FIXED by the Meridian and Compass points.

But the Plough's 2 IN-and-OUT-ARROWED POINTERS, leading Nature's 7-day-week Star-indicators as Compass-pointers dividing Nature's Year into 52 weeks, plus 1 day, CIRCLE as inversely arrowed around, outwardly timing each night and indicating each day's numerical position left-wise around the year, as diagrammed to demonstrate the natural basis and simple equality of the proposed "Yearal" of 13 equal months, wherein the proposed new month "Sol" is inserted to the left. The ancient constructors of Almanaks and Calendars in latitudes north of the 40th Parallel had to rely primarily upon the 4 seasonal positions of "the Plough," as depicted within the Inner Circle for the "4 Quarter-days of the Year" on the 4 Swastika-lines of the square-set Pre-Christian-Calendar-

Cross, which apparently was adopted by St. George and thence has become perpetuated as the prime feature of the British, Danish, Greek, Swiss and other national Flags.

Between each of those 4 Quarter-day-star-denoted points (which accorded so significantly with the year's Shortest and Longest days evidenced at the Solstices and its 2 days of Equal Day and Night on Mar. 22 and Sep. 22), intermediate generations of Northern-Calendar-Recording-Priests probably tallied 90 days as 3 months by 3 such simple tallies as the 30 sticks per month depicted on page 6—separately locating those 4 Quarter-year dividing dates as the 4 Quarterly Festivals fundamentally necessary to assemble the leaders of Tribes and Communities to direct the yearly affairs of public life. Those 4 dates with the 5th as an extra-Yule-tide-day for New Year's Day on our Dec. 23, would complete the year.

That Sky-Season-Chart shows the progressive positions of "The Plough," the "Pole-Star" and the "2 Guardians of the Pole" on the following typical dates when located where the figures chart their diagram numbers when at MIDNIGHT

III 3 III	MAR. 22	11 p.m.	10 p.m.	9 p.m.	8 p.m.
IV 4 IV	JUN. 21	Apr. 7	Apr. 22	May 7	May 22
I 1 I	SEP. 22	July 6	July 21	Aug. 6	Aug. 22
II 2 II	DEC. 22	Oct. 7	Oct. 23	Nov. 7	Nov. 23
		Jan. 6	Jan. 22	Feb. 6	Feb. 21

N.B.—These average 15 days per hour of difference, like the Egyptian Stars on page 27.

The Inner-Circle shows the 4 Seasonal Positions of the 10 most conspicuous Calendar-denoting Polar Stars—Ursa Major's "7 Stars of the Plough," with its "Double-Pointers" in front, and the 3 prominent Stars of Ursa Minor which are denoted on the next Star Map for Spring, within the "Little Bear" swinging by its tail-tip tethered to the Pole and Meridian by its Pole-Star, linked downwards to its 3 leading Shoulder-Stars—known as the "Twin Guardians of the Pole"—cycling parallel to the 5th and 6th Stars of "the Plough."

The 4 Mid-night locations separating the seasons are shown quartering the circles at the N., W., S. and E. points, on the above-recorded Quarter-Days, with the 4 earlier hours appended for later dates.

From those dates we may observe that there is an average data difference of 15 days between the hourly times at which these twin-groups, containing 10 circum-polar Stars, pass their respective Season-locating positions—charted for Mid-night as the standard time for recording observations of the Stars which, through the World's daily rotation, circle round in the 24 hours, indicated by the hour numbers within the smaller circle.

Beyond that, each daily progressive step of the Earth's season-producing motion along its orbit around the Sun is recorded by the out-rising cogs which successively register the relative Calendar positions of each passing day of every year, as "out-pointed" by the 2 pointer-stars (which also conversely point inwards to the Pole-Star as the center of this sky-clock's face) as they daily turn "one-day-degree" around, arriving at the previous night's point 4 minutes earlier, thus timing those stars as recurring one hour earlier in about 15 days.

Every Mid-night that "arrowed-pair of pointers" leading the 7 Stars of Ursa Major (indicating the 7 days of the week as the world-wide Calendar-measure for weeks) ticks off the expiring day from Nature's Calendar, as surely as the Mid-day-Sun similarly ticks off the passing day each Noon, when crossing the Meridian, as shown in the Pyramid section, on the world-surrounding Zodiacal Star Clock's face which cogs inversely around when watched as its stars cross the Southern sky meridian.

The unity of motion in both these Northern and Southern Star Clocks will become more evident if the reader inspects the next 4 maps of the Star-positions for the 4 Seasons, with the "Table of Times for Observations," and imagines the Pole-Star located as the center-point beneath an open transparent umbrella-shaped dome having 24 ribs representing hours, 15° apart, all converging to the Pole-Star, and spun completely around contrary to the clock each 24 hours to 1 degree measured by the space moved by the nearest transit star passing beyond the meridian, during the last 4 minutes preceding the nightly hour for that Calendar-recording Observation.

More precise and interesting observations can now be made by observers having—either a large transparent protractor definitely fixed like the above—or properly graduated observatory circling instruments to register each of the 365 nightly 4-minute-space-moves forward of "the Plough's

double pointers," which ever point out the days around that complete year indicating "Polar-Clock-in-the-Sky."

The following 4 Seasonal Maps of the Fixed Stars are mostly reproduced from Mr. Asa Smith's New York and Boston "Illustrated Astronomical Charts," to which I have added distinctive outlines and appended remodelled Time-tables. They display the Sideral Hemisphere visible along the New York Parallel of Latitude 41 degrees North, which almost centrally exhibits the main features of the Sky-dome, as it appears to the vast majority of humanity almost equally distributed to the North and South of that Parallel around the Earth.

Before briefly noting some distinctive Seasonal differences in the Calendar-denoting aspects of those 4 compressed Maps of the Sky-dome, it is advisable that non-astronomical readers should understand that those reduced Dome-maps have to be used inverted above the head, just like the starry sky, because they represent the whole visible heavens in every direction.

Although a local view in one direction of the heavens, such as the Polar-Sky-Clock-Map, may rightly be used as an Atlas Map, reading North to the top and East to the right—these Sideral Maps of the whole visible heavens representing all directions have to be viewed like the stars on a planisphere—from below.

As the Pyramid-developed Astronomy based on South Observations of Zodiacal Stars crossing the Meridian from East to West, show about 3 times the North transit-space traversed by the 2 "Pointers of the Plough" during the nightly 4 minutes both are over-lapping their respective daily sky-units of Calendar progress around their respective year circles of 30 degrees and 90 degrees radii, the Southern Stars are now almost entirely used for Calendar recording purposes. Consequently these 4 Star-Maps are printed for direct observation Southwards, by simply facing South, with the map applicable to the current season raised overhead so that its South meridian dips Southwards to indicate the then mid-direction of the horizon-wide belt of Zodiacal Stars.

To locate stars North of the Zenith, at the Tabled-nightly time, turn the map overhead, bottom upwards, so that the Pole-Star on the map may coincide, as closely as possible, with the direction of the Pole-Star in the sky; then the Stars on the map will indicate the direction of the circumpolar Stars.

To indicate East Stars, turn East, with the inverted map's top directed North.

To identify West Stars, turn West, with the inverted map's top kept North.

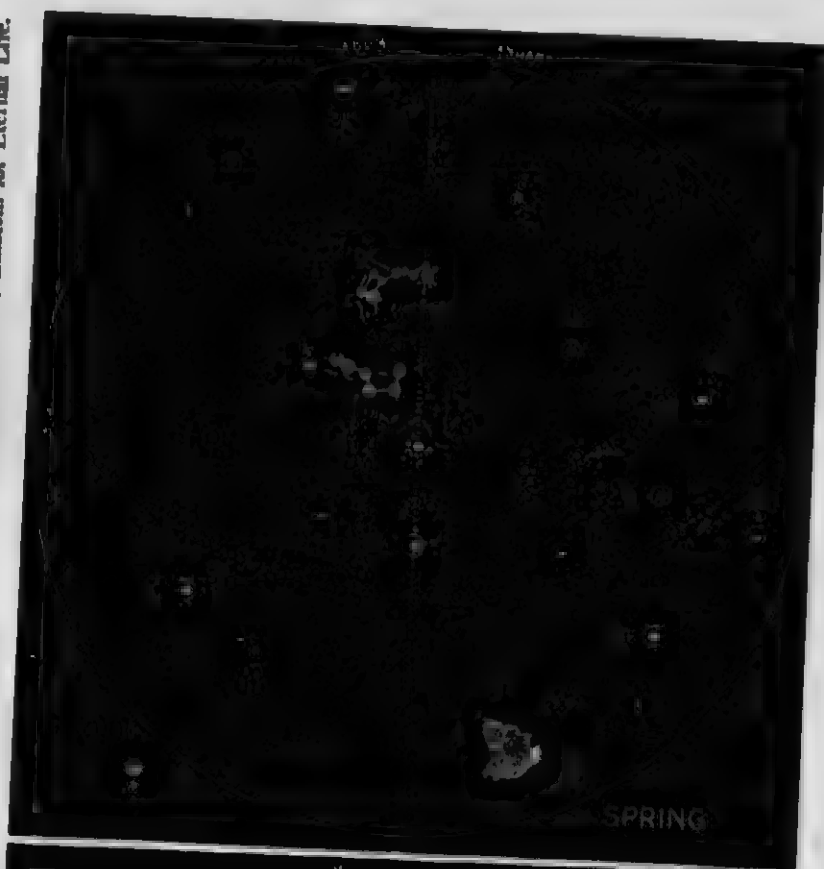
In all observations guard against mistaking the Planets (especially Venus, Mars, Jupiter and Saturn) for Fixed Stars, and remember that on these 4 inverted maps the East is on the left, and the West is on the right.

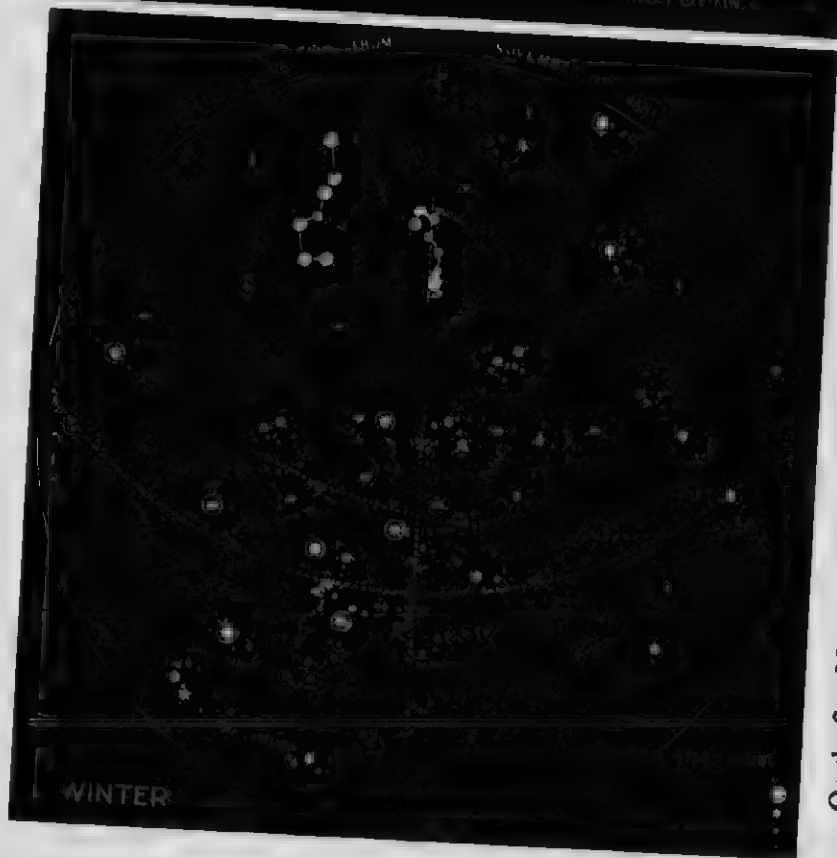
As mid-night observations are too late for most people, these 4 maps are timed for 10.0 p.m. on their respective 4 Quarter-days of Nature's Year—Mch. 22, June 21, Sept. 23 and Dec. 22.

SEASONAL MAPS of STARS in the CELESTIAL SPHERE mostly visible across Europe, North America, Central Asia and North Africa

The Vertical-line through the Pole-Star and Zenith is the local Celestial Meridian dividing each Map into East and West halves.—The part-circle crossing the Meridian at right-angles mid-way between the Zenith and the South Horizon is the Celestial Equator.—The longer segment of the circle cutting the of the Great Pyramid 4 minutes before the 24th hour of observation, during the Evolution of Star Calendars by Pyramid Priests about 4,000 years ago.

That year-traversing Ecliptic curve double-crossing-the-Equator led early Chinese to select the double-curve-bisected-circle as their Emblem for Eternal Life.





On the Star-Map for **SPRING ONLY**, the Constellations of Ursa Major and Ursa Minor—known also as the Great Bear and Little Bear—are more conspicuously outlined, with the 7 "Stars of the Plough," in each—separately encircled and con-joined by indicator-lines. Those Stars are also emphasized by the early Pyramid Builders who had not evolved the higher method of pyramid observations which won such superior agricultural and other advantages for the early Civilizations in Egypt, Assyria, India, China and Mexico. The brighter stars of 1st magnitude locating the dominant Constellations, developed by later pyramid observations, are more boldly encircled, on the maps, and listed at the foot of the next page, whereon the Map-times for each night are shown.

TABLE of the TIME EACH NIGHT when the STARS recur 4 minutes earlier in their respective positions on the 4 Star Maps
Bolder figures are dates in month above them, to which the hours and minutes refer.

January	February	March	July	August	September
1 1 40	10 11 44	20 9 48	20 1 40	20 11 40	20 9 48
2 1 30	11 11 40	21 9 40	21 1 30	21 11 30	21 9 40
3 1 20	12 11 36	22 9 32	22 1 20	22 11 20	22 9 32
4 1 10	13 11 32	23 9 24	23 1 10	23 11 10	23 9 24
5 1 0	14 11 28	24 9 16	24 1 0	24 11 0	24 9 16
6 1 50	15 11 24	25 9 8	25 1 50	25 10 50	25 9 8
7 1 40	16 11 20	26 9 0	26 1 40	26 10 40	26 9 0
8 1 30	17 11 16	27 8 52	27 1 30	27 10 30	27 8 52
9 1 20	18 11 12	28 8 44	28 1 20	28 10 20	28 8 44
10 1 10	19 11 8	29 8 36	29 1 10	29 10 10	29 8 36
11 1 0	20 11 4	30 8 28	30 1 0	30 10 0	30 8 28
12 1 50	21 11 0	31 8 20	31 1 50	31 9 50	31 8 20
1 1 40	22 10 56	1 8 12	1 1 40	1 9 40	1 8 12
2 1 30	23 10 52	2 8 4	2 1 30	2 9 30	2 8 4
3 1 20	24 10 48	3 8 56	3 1 20	3 9 20	3 8 56
4 1 10	25 10 44	4 8 48	4 1 10	4 9 10	4 8 48
5 1 0	26 10 40	5 8 40	5 1 0	5 9 0	5 8 40
6 1 50	27 10 36	6 8 32	6 1 50	6 8 50	6 8 32
7 1 40	28 10 32	7 8 24	7 1 40	7 8 40	7 8 24
8 1 30	29 10 28	8 8 16	8 1 30	8 8 30	8 8 16
9 1 20	30 10 24	9 8 8	9 1 20	9 8 20	9 8 8
10 1 10	31 10 20	10 8 0	10 1 10	10 8 10	10 8 0
11 1 0	1 10 16	11 8 52	11 1 0	11 8 0	11 8 52
12 1 50	2 10 12	12 8 44	12 1 50	12 7 50	12 8 44
1 1 40	3 10 8	13 8 36	1 1 40	1 7 40	1 8 36
2 1 30	4 10 4	14 8 28	2 1 30	2 7 30	2 8 28
3 1 20	5 10 0	15 8 20	3 1 20	3 7 20	3 8 20
4 1 10	6 9 56	16 8 12	4 1 10	4 7 10	4 8 12
5 1 0	7 9 52	17 8 4	5 1 0	5 7 0	5 8 4
6 1 50	8 9 48	18 8 56	6 1 50	6 6 50	6 8 56
7 1 40	9 9 44	19 8 48	7 1 40	7 6 40	7 8 48
8 1 30	10 9 40	20 8 40	8 1 30	8 6 30	8 8 40
9 1 20	11 9 36	21 8 32	9 1 20	9 6 20	9 8 32
10 1 10	12 9 32	22 8 24	10 1 10	10 6 10	10 8 24
11 1 0	13 9 28	23 8 16	11 1 0	11 6 0	11 8 16
12 1 50	14 9 24	24 8 8	12 1 50	12 5 50	12 8 8
1 1 40	15 9 20	25 8 0	1 1 40	1 5 40	1 8 0
2 1 30	16 9 16	26 8 52	2 1 30	2 5 30	2 8 52
3 1 20	17 9 12	27 8 44	3 1 20	3 5 20	3 8 44
4 1 10	18 9 8	28 8 36	4 1 10	4 5 10	4 8 36
5 1 0	19 9 4	29 8 28	5 1 0	5 5 0	5 8 28
6 1 50	20 9 0	30 8 20	6 1 50	6 4 50	6 8 20
7 1 40	21 8 56	31 8 12	7 1 40	7 4 40	7 8 12
8 1 30	22 8 52	1 8 4	8 1 30	8 4 30	8 8 4
9 1 20	23 8 48	2 8 56	9 1 20	9 4 20	9 8 56
10 1 10	24 8 44	3 8 48	10 1 10	10 4 10	10 8 48
11 1 0	25 8 40	4 8 40	11 1 0	11 4 0	11 8 40
12 1 50	26 8 36	5 8 32	12 1 50	12 3 50	12 8 32
1 1 40	27 8 32	6 8 24	1 1 40	1 3 40	1 8 24
2 1 30	28 8 28	7 8 16	2 1 30	2 3 30	2 8 16
3 1 20	29 8 24	8 8 8	3 1 20	3 3 20	3 8 8
4 1 10	30 8 20	9 8 0	4 1 10	4 3 10	4 8 0
5 1 0	31 8 16	10 8 52	5 1 0	5 3 0	5 8 52
6 1 50	1 8 12	11 8 44	6 1 50	6 2 50	6 8 44
7 1 40	2 8 8	12 8 36	7 1 40	7 2 40	7 8 36
8 1 30	3 8 4	13 8 28	8 1 30	8 2 30	8 8 28
9 1 20	4 8 0	14 8 20	9 1 20	9 2 20	9 8 20
10 1 10	5 7 56	15 8 12	10 1 10	10 2 10	10 8 12
11 1 0	6 7 52	16 8 4	11 1 0	11 2 0	11 8 4
12 1 50	7 7 48	17 8 56	12 1 50	12 1 50	12 8 56
1 1 40	8 7 44	18 8 48	1 1 40	1 1 40	1 8 48
2 1 30	9 7 40	19 8 40	2 1 30	2 1 30	2 8 40
3 1 20	10 7 36	20 8 32	3 1 20	3 1 20	3 8 32
4 1 10	11 7 32	21 8 24	4 1 10	4 1 10	4 8 24
5 1 0	12 7 28	22 8 16	5 1 0	5 1 0	5 8 16
6 1 50	13 7 24	23 8 8	6 1 50	6 1 50	6 8 8
7 1 40	14 7 20	24 8 0	7 1 40	7 1 40	7 8 0
8 1 30	15 7 16	25 8 52	8 1 30	8 1 30	8 8 52
9 1 20	16 7 12	26 8 44	9 1 20	9 1 20	9 8 44
10 1 10	17 7 8	27 8 36	10 1 10	10 1 10	10 8 36
11 1 0	18 7 4	28 8 28	11 1 0	11 1 0	11 8 28
12 1 50	19 7 0	29 8 20	12 1 50	12 1 50	12 8 20
1 1 40	20 6 56	30 8 12	1 1 40	1 1 40	1 8 12
2 1 30	21 6 52	31 8 4	2 1 30	2 1 30	2 8 4
3 1 20	22 6 48	1 8 56	3 1 20	3 1 20	3 8 56
4 1 10	23 6 44	2 8 48	4 1 10	4 1 10	4 8 48
5 1 0	24 6 40	3 8 40	5 1 0	5 1 0	5 8 40
6 1 50	25 6 36	4 8 32	6 1 50	6 1 50	6 8 32
7 1 40	26 6 32	5 8 24	7 1 40	7 1 40	7 8 24
8 1 30	27 6 28	6 8 16	8 1 30	8 1 30	8 8 16
9 1 20	28 6 24	7 8 8	9 1 20	9 1 20	9 8 8
10 1 10	29 6 20	8 8 0	10 1 10	10 1 10	10 8 0
11 1 0	30 6 16	9 8 52	11 1 0	11 1 0	11 8 52
12 1 50	31 6 12	10 8 44	12 1 50	12 1 50	12 8 44
1 1 40	1 6 8	11 8 36	1 1 40	1 1 40	1 8 36
2 1 30	2 6 4	12 8 28	2 1 30	2 1 30	2 8 28
3 1 20	3 6 0	13 8 20	3 1 20	3 1 20	3 8 20
4 1 10	4 5 56	14 8 12	4 1 10	4 1 10	4 8 12
5 1 0	5 5 52	15 8 4	5 1 0	5 1 0	5 8 4
6 1 50	6 5 48	16 8 56	6 1 50	6 1 50	6 8 56
7 1 40	7 5 44	17 8 48	7 1 40	7 1 40	7 8 48
8 1 30	8 5 40	18 8 40	8 1 30	8 1 30	8 8 40
9 1 20	9 5 36	19 8 32	9 1 20	9 1 20	9 8 32
10 1 10	10 5 32	20 8 24	10 1 10	10 1 10	10 8 24
11 1 0	11 5 28	21 8 16	11 1 0	11 1 0	11 8 16
12 1 50	12 5 24	22 8 8	12 1 50	12 1 50	12 8 8
1 1 40	13 5 20	23 8 0	1 1 40	1 1 40	1 8 0
2 1 30	14 5 16	24 8 52	2 1 30	2 1 30	2 8 52
3 1 20	15 5 12	25 8 44	3 1 20	3 1 20	3 8 44
4 1 10	16 5 8	26 8 36	4 1 10	4 1 10	4 8 36
5 1 0	17 5 4	27 8 28	5 1 0	5 1 0	5 8 28
6 1 50	18 5 0	28 8 20	6 1 50	6 1 50	6 8 20
7 1 40	19 4 56	29 8 12	7 1 40	7 1 40	7 8 12
8 1 30	20 4 52	30 8 4	8 1 30	8 1 30	8 8 4
9 1 20	21 4 48	31 8 56	9 1 20	9 1 20	9 8 56
10 1 10	22 4 44	1 8 48	10 1 10	10 1 10	10 8 48
11 1 0	23 4 40	2 8 40	11 1 0	11 1 0	11 8 40
12 1 50	24 4 36	3 8 32	12 1 50	12 1 50	12 8 32
1 1 40	25 4 32	4 8 24	1 1 40	1 1 40	1 8 24
2 1 30	26 4 28	5 8 16	2 1 30	2 1 30	2 8 16
3 1 20	27 4 24	6 8 8	3 1 20	3 1 20	3 8 8
4 1 10	28 4 20	7 8 0	4 1 10	4 1 10	4 8 0
5 1 0	29 4 16	8 8 52	5 1 0	5 1 0	5 8 52
6 1 50	30 4 12	9 8 44	6 1 50	6 1 50	6 8 44
7 1 40	31 4 8	10 8 36	7 1 40	7 1 40	7 8 36
8 1 30	1 4 4	11 8 28	8 1 30	8 1 30	8 8 28
9 1 20	2 4 0	12 8 20	9 1 20	9 1 20	9 8 20
10 1 10	3 3 56	13 8 12	10 1 10	10 1 10	10 8 12
11 1 0	4 3 52	14 8 4	11 1 0	11 1 0	11 8 4
12 1 50	5 3 48	15 8 56	12 1 50	12 1 50	12 8 56
1 1 40	6 3 44	16 8 48	1 1 40	1 1 40	1 8 48
2 1 30	7 3 40	17 8 40	2 1 30	2 1 30	2 8 40
3 1 20	8 3 36	18 8 32	3 1 20	3 1 20	3 8 32
4 1 10	9 3 32	19 8 24	4 1 10	4 1 10	4 8 24
5 1 0	10 3 28	20 8 16	5 1 0	5 1 0	5 8 16
6 1 50	11 3 24	21 8 8	6 1 50	6 1 50	6 8 8
7 1 40	12 3 20	22 8 0	7 1 40	7 1 40	7 8 0
8 1 30	13 3 16	23 8 52	8 1 30	8 1 30	8 8 52
9 1 20	14 3 12	24 8 44	9 1 20	9 1 20	9 8 44
10 1 10	15 3 8	25 8 36	10 1 10	10 1 10	10 8 36
11 1 0	16 3 4	26 8 28	11 1 0	11 1 0	11 8 28
12 1 50	17 3 0	27 8 20	12 1 50	12 1 50	12 8 20
1 1 40	18 2 56	28 8 12	1 1 40	1 1 40	1 8 12
2 1 30	19 2 52	29 8 4	2 1 30	2 1 30	2 8 4
3 1 20	20 2 48	30 8 56	3 1 20	3 1 20	3 8 56
4 1 10	21 2 44	31 8 48	4 1 10	4 1 10	4 8 48
5 1 0	22 2 40	1 8 40	5 1 0	5 1 0	5 8 40
6 1 50	23 2 36	2 8 32	6 1 50	6 1 50	6 8 32
7 1 40	24 2 32	3 8 24	7 1 40	7 1 40	7 8 24
8 1 30	25 2 28	4 8 16	8 1 30	8 1 30	8 8 16
9 1 20	26 2 24	5 8 8	9 1 20	9 1 20	9 8 8
10 1 10	27 2 20	6 8 0	10 1 10	10 1 10	10 8 0
11 1 0	28 2 16	7 8 52	11 1 0	11 1 0	11 8 52
12 1 50	29 2 12	8 8 44	12 1 50	12 1 50	12 8 44
1 1 40	30 2 8	9 8 36	1 1 40	1 1 40	1 8 36
2 1 30	31 2 4	10 8 28	2 1 30	2 1 30	2 8 28
3 1 20	1 2 0	11 8 20	3 1 20	3 1 20	3 8 20
4 1 10	2 1 56	12 8 12	4 1 10	4 1 10	4 8 12
5 1 0	3 1 52	13 8 4	5 1 0	5 1 0	5 8 4
6 1 50	4 1 48	14 8 56	6 1 50	6 1 50	6 8 56
7 1 40	5 1 44	15 8 48	7 1 40	7 1 40	7 8 48
8 1 30	6 1 40	16 8 40	8 1 30	8 1 30	8 8 40
9 1 20	7 1 36	17 8 32	9 1 20	9 1 20	9 8 32
10 1 10	8 1 32	18 8 24	10 1 10	10 1 10	10 8 24
11 1 0	9 1 28	19 8 16	11 1 0	11 1 0	11 8 16
12 1 50	10 1 24	20 8 8	12 1 50	12 1 50	12 8 8
1 1 40	11 1 20	21 8 0	1 1 40	1 1 40	1 8 0
2 1 30	12 1 16	22 8 52	2 1 30	2 1 30	2 8 52
3 1 20	13 1 12	23 8 44	3 1 20	3 1 20	3 8 44
4 1 10	14 1 8	24 8 36	4 1 10	4 1 10	4 8 36
5 1 0	15 1 4	25 8 28	5 1 0	5 1 0	5 8 28
6 1 50	16 1 0	26 8 20	6 1 50	6 1 50	6 8 20
7 1 40	17 1 56	27 8 12	7 1 40	7 1 40	7 8 12
8 1 30	18 1 52	28 8 4	8 1 30	8 1 30	8 8 4
9 1 20	19 1 48	29 8 56	9 1 20	9 1 20	9 8 56
10 1 10	20 1 44	30 8 48	10 1 10	10 1 10</	

35

OBELISKS and HIGH SUN-DIALS, etc., used to register HOURS.



EGYPTIAN OBELISK at KARNAK, showing its long, four-pointed APEX



ROMAN OBELISK showing its crude APEX and inferior workmanship, as although the Romans copied from the Egyptians they lacked the finished and thorough workmanship so characteristic of Egyptian obelisk sculptors. The 105-ft. obelisk (largest erected) in front of St. Peter's at Rome was sculptured in Egypt.

Similarly the imitation Calendar which has been imposed upon us by Julius Caesar, having imperfectly copied from the symmetrical Calendar of the Egyptians, was correspondingly deteriorated by scattering the Egyptian 5 terminal days as the odd 31st days beyond the always equal Egyptian months of 30 days. That defect was apparently caused by the desire to withhold from the proud Roman people the fact that their Caesar was copying from the conquered Egyptians, who wisely used equal months.



HINDOO OBSERVATORY at JEYPORE (India), showing the huge Equatorial SUN-DIAL (on the right) and the 3-tier circular observatory (on the left), which may have been used to trace the apparent progressions of the "Fixed Stars" at the season-dividing W., E. and S. points, as indicated by End-plates "N," "P" and "T." That Equatorial Sundial appears to significantly combine and reduce to a smaller scale, the advantages of the pyramid's slope (replaced by the great "style" up the middle of which the steps ascend) with the Obelisk's effect derived by the shadows cast from the surmounted stud or "sighting-pin" above the steps down to the floor beyond the vertical wall.



The PERSIAN "DRUIDICAL MONOLITHS" are shown to the right and left of the inset of the British "Stone-henge," to demonstrate their great size. They were used like the "Amplitude Observatories" already explained for Plates "E," "T" and "K" Persians used equal months.

The Season-dividing Locations of the 3 Polar-diameter-joined Groups of Stars (The Plough, Little Dipper and Cassiopea) compared at Sunset, Midnight and Sunrise, as they circle around the Pole-star from North to West, thence South to East, Quartering that Sky-clock's face squarely on "Quarter-Days."

Peabody Museum Papers.

Vol I, No. 7, Pl. I.

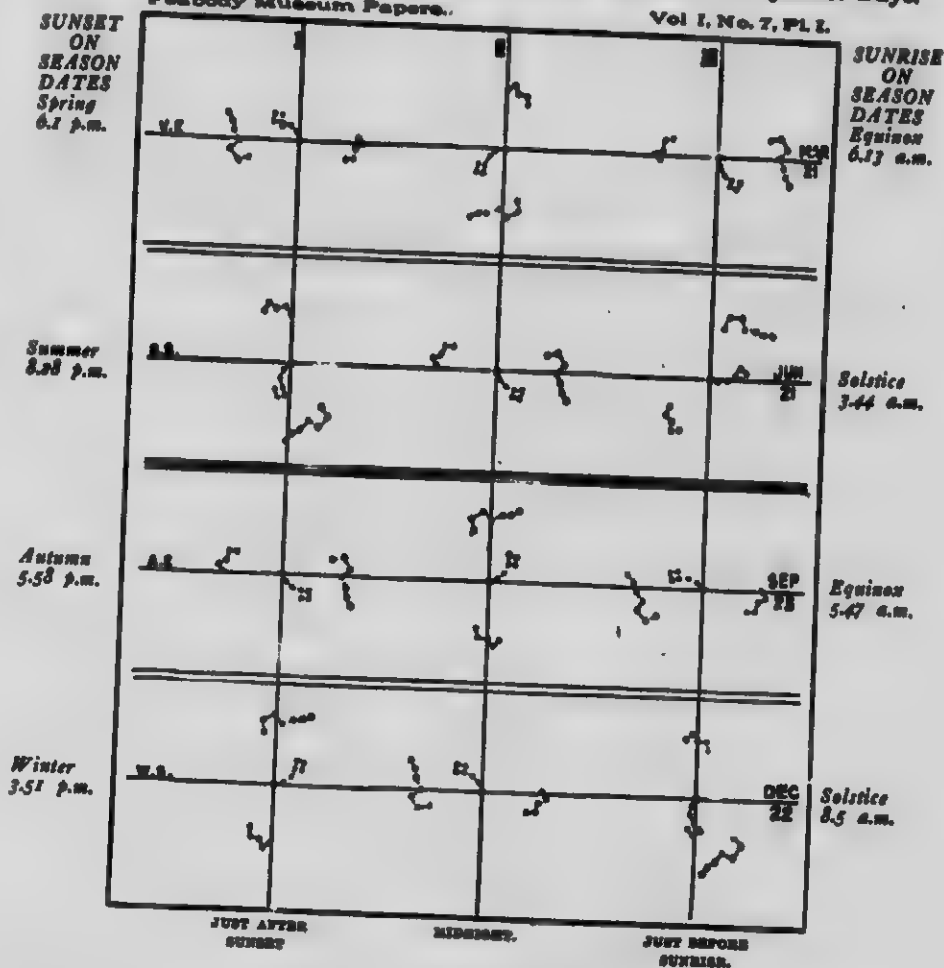


CHART OF THE POLAR CONSTELLATIONS.

(The above Chart and the A, B and C star-diagrams opposite are from Mrs. Zelia Nuttall's "Fundamental Principles of Civilization, 1901"; Harvard University, U.S.A.)

This Chart of the prominent North Polar Stars shows the 7 Stars of the Plough in Ursa Major, the inswinging 7 Stars of the Dipper in Ursa Minor, and the less known W-like group of 5 stars in Cassiopea (The Lady in Her Chair)—as shown on the "Spring" Star-Map for the convenient hour of 10.0 p.m. on the 4 Season-dividing nights.

Thus conjoined as a fixed circumpolar diameter, they daily turn together like a rigid 24-hours-clock's-face-wide-pointer timed to gain 4 minutes to each mid-night, thus gaining in the 91 days per Quarter Year, the 6 hour spaces which approximate the beginning of the 4 Seasons, at right-angles on the great Polar "Clock in the Sky," as later illustrations prove.

This chart demonstrates the superiority of midnight observations, which develop square across the 4 Polar-right-angles successively at the commencement of each of the 4 Seasons at

the Vernal Equinox, Summer Solstice, Autumnal Equinox, and Winter Solstice, on Mar. 21, June 21, Sep. 23 and Dec. 22 respectively:—whereas the Sunset and Sunrise alignments do not square truly, and their observation is uncertain because atmospheric conditions are then liable to be obscured by mists, fogs, etc., and always stretched to irregular diagrams through morning and evening times for observation varying with the lengths of days, as side-lined above.

The "A" and "B" groupings of the 7 Stars of the Plough diagrammed together for all the 4 Seasons, indicate the origin of the Swastika Emblem—almost universally used by the Ancient Nations of the Northern Hemisphere.

The lower "C" set of three-rayed groupings for Sunset, Midnight and Sunrise diagrams at each Seasons, indicate the origin of the Swastika "Triskelion" as the natural sign for nature's star locations at her year's-end on Dec. 22nd.

PROBABLE CALENDAR ORIGIN of the SWASTIKA EMBLEM

The 7 Stars of "the Plough" con-joined for the 4 Season-dividing-dates, at Mid-night through the "Pointers" as radii from the central "Pole-Star."



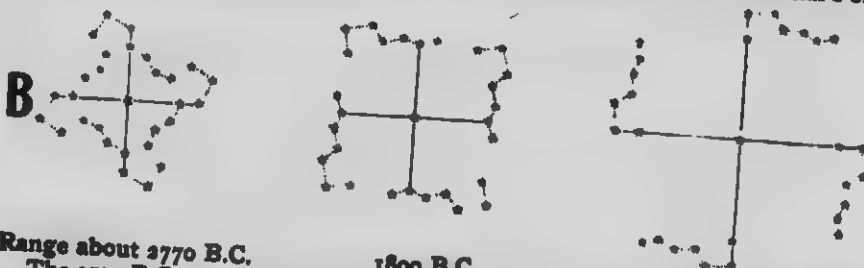
Just after Sunset

At Midnight

Just before Sunrise

The most reliable position is observed at Midnight, because on those 4 Quarter-days of Nature's Year, the 2 front-stars as "Pointers" now constantly pointing to the Pole-star as the center of their progressive Calendar-recording-circuit, then squarely register those Quarter-year-points at right angles to each other across their Polar Center—as their year-typifying emblem "the Swastika" consequently does.

Before dawn and after dusk, their visibility is varied by weather conditions, different Refractions, Seasons and Latitudes, but their diverse angles of deviation are caused most of all by the divergent times of Sunset and Sunrise observations (as side-lined opposite), deflecting the direction of those star-radii 15 degrees per hour. The expanding distances and cross-points of the 7 Stars from the Celestial Pole



Range about 2770 B.C.

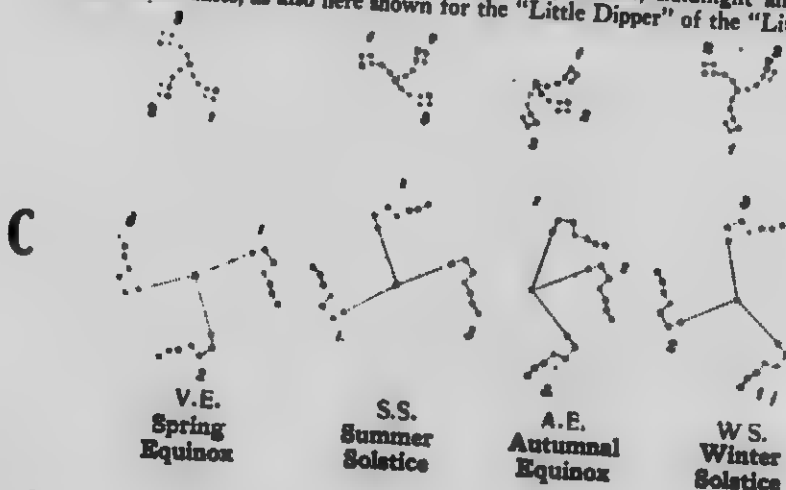
1800 B.C.

2000 A.D.

The 2770 B.C. square-cross-lines through the 3rd and 4th of the 7 Stars were not naturally suggestive as "Pointers," like the 1st and 2nd Stars now are.

These prove that Ancient Observers had far less chance to Calendar by these Stars, which then had not their direct Pointers at right-angles to guide observers to the 4 Season-points, then indistinct, because "the Pointers" did not indicate the Pole-star and circled around unceasingly, as a non-indicating-part of the broken chain of Septentriones (7-Polar-stars).

The Triskelion (3 legged emblem) was apparently derived from the conjoined "Plough's Pointers" during Sunset, Mid-night and Sunrise on Dec. 22. They prove that only the last tri-ray for the longest night of the year develops the 3 equal radiated pointers. The positions 1, 2 and 3 are located by Sunset, Midnight and Sunrise, on the Season-dates, as also here shown for the "Little Dipper" of the "Little Bear."



V.E.

Spring
Equinox

S.S.

Summer
Solstice

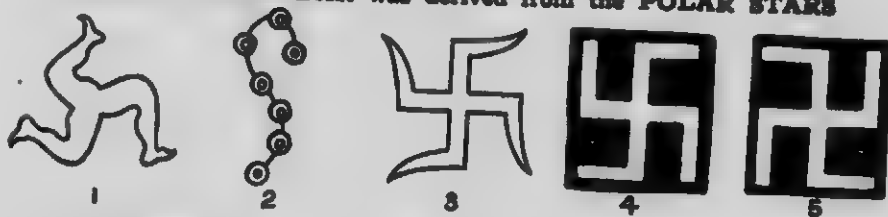
A.E.

Autumnal
Equinox

W.S.

Winter
Solstice

CHINESE CALENDAR was derived from the POLAR STARS



1. The "Triskelion" (3 legs of man) sign for the Mid-Winter end of the Year.

2. The Mexican "S" sign also emphasizes the natural year's end on Dec. 22nd, as manifested by its unmistakable resemblance to the 7 stars of the "Dipper" in Ursa Minor on the Winter Star Map.

That is significantly confirmed by the sculpture of that group, down the left-side of the Mexican Calendar Stone on page 40. It seems linked southwards by the chain of stars to those of First Magnitude around Orion, and thence through Canis Major to the Mexican southern horizon down the Meridian at mid-night, to locate which the Dec. 22nd 10.0 p.m. position on the Winter Star Map needs 2 hours (30 degrees) further progression eastwards to the meridian.

Below those the most observed Stars of the Plough are shown enlarged as the Aztecs sculptured them (where they had most space) in their Winter Solstice aspect—slightly tilted from the North towards the South-east—when Nature's Year ends with the stroke of Mid-night on Dec. 22nd.

3. The Hindu Jain Swastika so often linked with the Sun, Moon and Stars, has its ends turned out from its right-projecting arms to represent the rotation of the Plough's Stars like a windmill's sails set to catch the wind.

Their left-ward motion is indicated by the left-curve-tips representing the Mid-night directions of the Plough's-out-curved-handle-stars, on the 4 Season-dividing-nights diagrammed on the "Chart of Polar Constellations," and shown for 2 hours before (at 10.0 p.m.) on the 4 Star Maps, where the left-curved-tail of the Ancient sign of the Great Bear on the Spring Star Map indicates the Calendar origin of both the Hindu Jain Swastika and the Buddhist Praying Wheel.

4. The "Normal Swastika" with its center cross representing the S., E., N. and W. locations of the Plough's 7 stars when each of the Spring, Summer, Autumn and Winter seasons begin, has its ends turned to the right to denote the right projection of the 5 trailing stars of the Plough, from the 2 "Pointer Stars" leading that Constellation

on its Yearly Circuit, advancing 4 minutes per night as indicated by those 2 out-pointing Stars on the "Polar Clock in the Sky" where the 4 seasonal directions indicate that 7-Star origin of the Swastika in that most conspicuous group of Stars in the Northern Hemisphere.

5. The "Suavastika" with ends turned to the left—like the 7 Stars of the Little Dipper which always curve and tail-swing leftwards, hinging on the Polar Star—indicates its origin in that constellation of Ursa Minor, especially as that is most used in India and near the circuit of the Tropic of Cancer whence it is observed cycling above the horizon, whereas the 7 "Stars of the Plough" in Ursa Major disappear below the night-horizon during nearly half of the year.

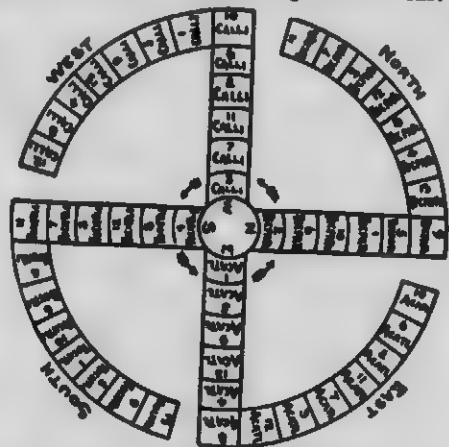
The Chinese Months and Seasons were determined by the revolutions of the 7 Stars of the Plough, named 7 Directors, as indicated on the 4 Seasonal locations I have diagrammed on the "Polar Clock in the Sky," on page 30, thus:

When the Tail of the Plough as indicator on Mar. 22, points East, SPRING begins,
On Jun. 21, " North, SUMMER "
On Sep. 22, " West, AUTUMN "
On Dec. 22, " South, WINTER "

Special interest attaches to the fact that the earliest Chinese emblem for the Year was a stalk of wheat; indicating that the prime purpose of the Calendar was to increase the agricultural supplies of food—as the Aztecs most successfully did with maize.

In Ancient Times the 7 days of the Chinese week were derived from the 7 bright Stars of the Plough and as Herodotus records that the Egyptians had a week of 7 days, and we know that the Hindoos had anciently the same, there seems a probability that after Ancient Races began to tally the number of days in the year by noting the recurring yearly cycle of the 7 Stars of the Plough, they abandoned unequal Quarter-Moon counts for the 7 recurring days suggested by those 7 "Director Stars" most naturally used to divide the 365 days of the Polar-sky-clock's year into 52 equal weeks.

Ancient Mexican Circular-Swastika, indicating Star-motions Around the Pole-Star, 13 Years per Quarter Cycle, and 13 Weeks per Quarter Year.

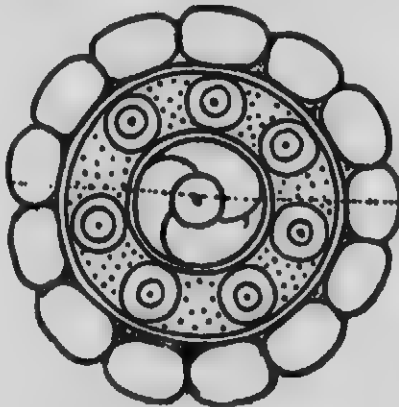


"A," the Mexican Calendar-Swastika—and "B," Its Explanatory Diagram

This circular quadrant-like Swastika's evident design for Calendar use is particularly interesting, as it constitutes an absolute proof of native Mexican association of the Swastika symbol with ideas of rotary star-motion and the progress of time, indicating as Mrs. Nuttall well records that "the Swastika may have been primarily and generally employed by primitive races as a sign for a year or cycle."

I submit that this Circular-Swastika was used both as a yearly Calendar of 52 sacred 7 star-indicated and secretly recorded weeks of 7 days each, and their Aztec Era cycle of 52 years; both of which were quartered into the significant number of 13, which when multiplied by the 7 days suggested by those natural measurers of the year, "the 7 Stars of the Plough," recorded the 91 days in each Quarter of the year.

That seems indirectly corroborated by the



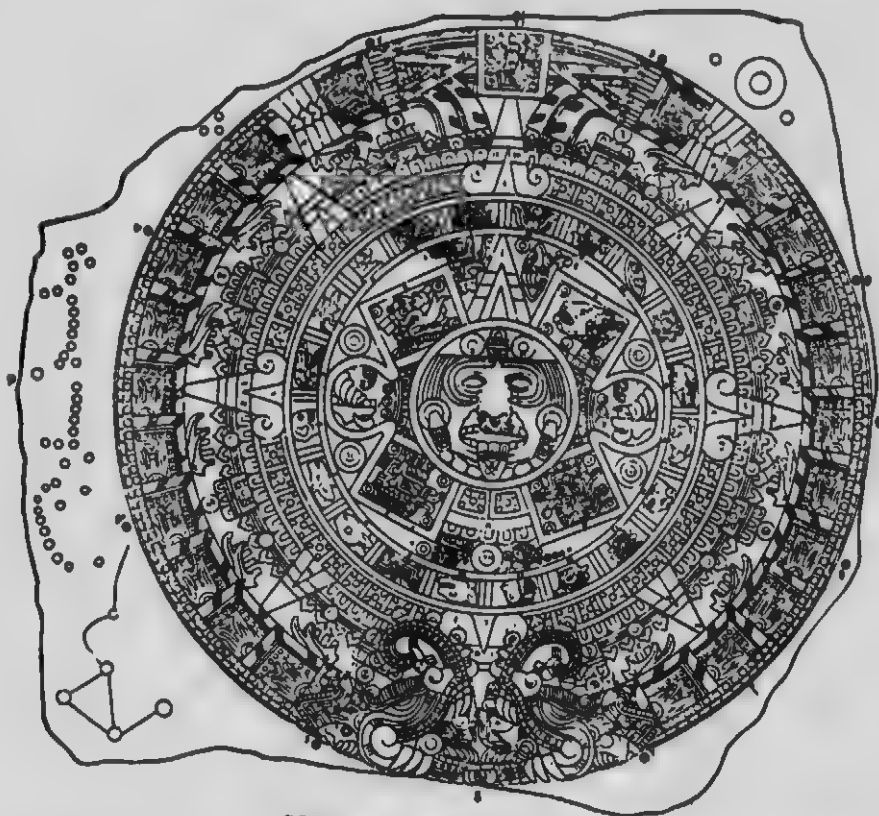
TENNESSEE (U.S.A.) COROET

This from page 49 of Mrs. Nuttall's book has the cycling Sun in the center, surrounded by 7 disks for days per secret week, and the 13 outer weeks per Quarter Year (reasonably assumed to be indicated by the 13 diameter-joined stars as below). These may have led the priests to that mystic play on numbers, which established 7 plus 13 totalling 20 days in their months, so easily quartered by their 4 public weeks of 5 days each, in their always equal 20-day months.

The 13 uniform Mexican emblems for Rabbit, Arrow, Maize and House, distinctively registered in each Quadrant, were used in the order indicated by the arrows surrounding the central Sun on the Explanatory Diagram's expanding circles, in accordance with dots 1 to 13 on the original.

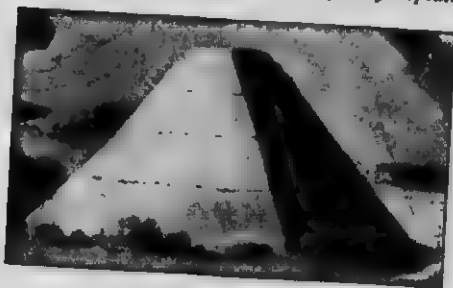
A remarkable feature of that circular Calendar Swastika is that, like the circumpolar Stars, its reading turns in reverse clock-motion.

Further, there seems good reason to believe that the peculiar shape of those Quadrants—each having 5 emblems to the right, 1 pivoted at the elbow, and 7 turned to the left, totalling 13; correspond to the 13 most prominent Circumpolar Stars as aligned together down the mid-night central diagrams on the "Chart of the Polar Constellations," where the 5 W-like Stars of Cassiopea, conjoined through the 1 Pole-star to the 7 Stars of the Plough, are highly suggestive, especially as the 6 smaller Stars of the Minor "Dipper" seem to have been ignored through being out of the balanced range naturally suggested by comparing the Polar Distance of the 5 Stars of Cassiopea with the 7 Stars of the Plough, as may be readily understood from the 4 Star-Maps.

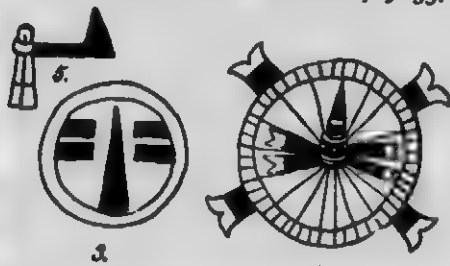


Mexican Calendar Stone

The Mid-way Ring shows 20 day signs for each of their 18 EQUAL MONTHS. Sun, Moon and Planets on the N.E. projection, and the typical constellations of "Fixed Stars" on the West side, evidence its use as a Calendar—further confirmed by the 8 parallel but not equi-distant shadow-rod-holes around its circumference to stretch the diagonal cords across to time Equinoxes and Solstices by their Meridian shadows. The Star-signs on the left are partly explained on page 38, and the Star-Map on page 33.

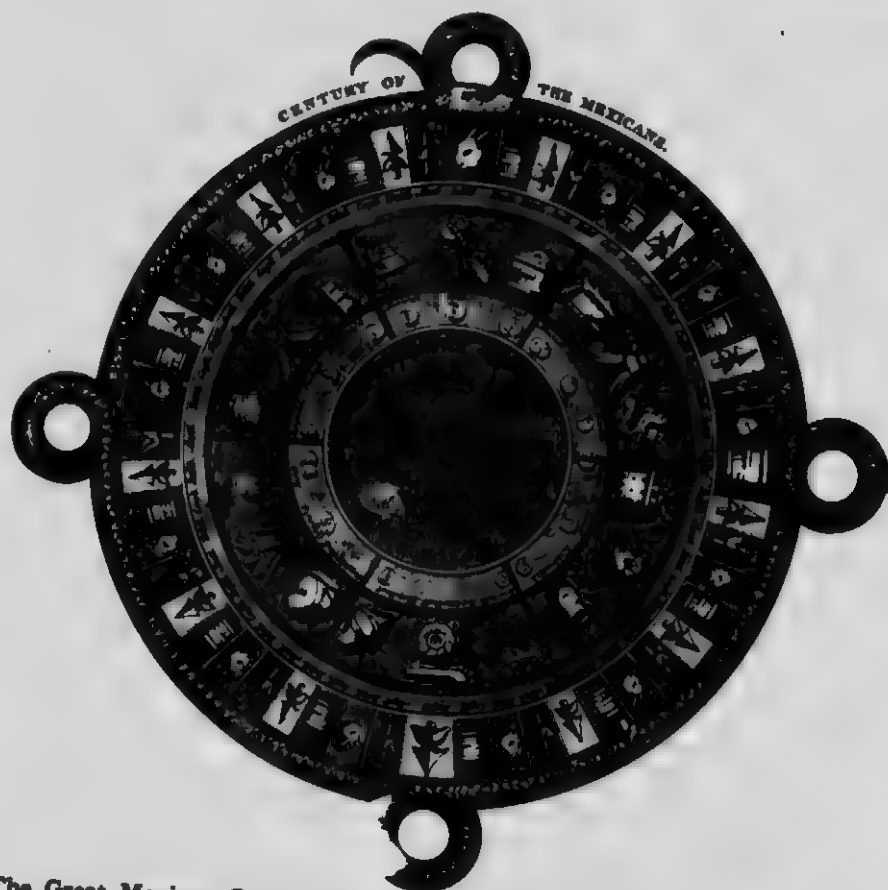


Mexican "PYRAMID OF THE SUN" (San de Teotihuacan) near Mexico City, where also is the smaller Pyramid of the Moon. The base-line of the Sun Pyramid is 645 feet, according to W. Bullock—from whose "6 Months' Residence in Mexico" the above is reproduced. This Pyramid was originally surmounted by an Apex-pointed Temple, indicating that early Mexicans had to trace the Sun's Seasonal Elevations by observing Pyramid Shadows as the early Egyptians did.



ANCIENT MEXICAN GNOMONS

That is evidenced in part by the above 3 typical styles of Gnomons and Dials used by the Aztec Sun-Priests, to locate the Equinoxes and Solstices as the 4 essential dividing periods of Yearly Time between which their marvellously useful Calendar System was built up—vide page 117 of Mrs. Nuttall's "Principles of Civilization," published by Harvard University in 1901. No. 4 was the sacred symbol for the Festival at the Spring Equinox.



The Great Mexican Cycle of 52 years (ex Clavigero's History of Mexico) —divided into Quarters or "Indictions" of 13 years each, exemplified on page 3.

The year signs in the centre are surrounded by the 20 confusing Phases of the Moon they wisely discarded to establish EQUAL MONTHS of 20 days instead. Around those the signs for each of their 18 equal months of 20 days are shown.

The outer-ring, bounded by the serpent, displays the 4 Leap Year repeating year signs, used in conjunction with the series of 13 dots of Indiction, as per page 3, to distinctively denote each year of their Cycle of 52, read leftwards from the top.



THE GREAT MEXICAN PYRAMID AT CHOLULA
(From Planche's Vues des Cordilleres)

Date built, unknown (Pre-Aztec), sides 1,423 ft. long, height 177 ft., covers about 44 acres. The 365 steps up the 4 Season slopes to their observatory, indicate the great "year-finding and recording purpose" of this huge truncated pyramid, apparently used to trace the Seasonal courses of the fixed Stars. That seems evidenced by the facts that its base is about twice the length of the Great Pyramid of Egypt, but its height less than half, consequently Mexican observers derived a 20 days' star-gauge, as my dotted lines indicate. The Egyptians derived the 10 days' gauge as per Fore-plates A and B.

Mexican Calendars Derived from Pyramid and Star Observations

From the foregoing it is manifest that both the Ancient Egyptians and Mexicans used Pyramids to derive Calendars as the prime basis of their civilizations. The Egyptian Star List on page 27 is specially significant as the "Pye" pyramid sign mathematicians still use to express the ratio of a circle's diameter to its circumference was used to mark the hourly positions of the stars.

14. We have not space now to further explain the reasons for the height and shape of the pyramids, both of which were the result of scientific observations on the part of the builders; e.g., if the Great Egyptian pyramid 484 feet high was replaced by a pole of the same height it would be useless for the purpose of observing the shadows, because the half-degree width of the Sun would cause its outer-edges to shine round the Pole, and so cut off the shadow hundreds of feet above the ground.

The Mexican "Aztecs" (like the Chinese and other Ancient Nations) independently devised their unique Calendar System, by using truncated Pyramids.



PROOF THAT MEXICAN PYRAMIDS WERE USED TO LOCATE THE SEASONS BY TRACING THE SUN'S PATH OVER THE PYRAMID

PLATE 7.—The Mexican yearly cycle of eighteen months, of twenty days each, as reproduced above, registers their sixteenth month as beginning about December 16. Its name of "Retreating Sun" signifies mid-winter and the emblem for that month is significantly shown in the sixteenth position as a pyramid surmounted by the double-curved sun, representing its rising in the east and its setting in the west. Note the significance of the "Step-Pyramid," also the sun daily cogging the moon and year around, as evidenced by the Sun, Moon and Earth circles surmounted by the 18 equal months in the years Mexicans thus derived.

Each year was divided into 18 months consisting of 20 days each, quartered into

weeks of 5 days each—the most conveniently combined weekly and monthly system known. That they had engraved on their middle circle of their Calendar Stone.



MEXICAN CALENDAR STONE

(Weighed about 50 tons as originally quarried.)

PLATE 8.—Their yearly cycle of 365 days sculptured around as $18 \times 20 = 360$ —plus the 5 days of Festival ending the year.

Study of the almanak methods devised by different races throughout the world demonstrates that whilst all were inexorably compelled by Nature to locate their seasons by observing the apparent movement of the sun, each race had inevitably during its earlier generations to devise its own method. Most of the tropical and near-tropical races had to adopt the shadow method shown in Plate 5. The best knowledge of the year was too valuable for one race to tell to its competitors, hence the writer, after noting the direct observation indications of the truncated pyramids of Mexico, submits that it is futile for speculative theorists to urge that the Mexicans derived their methods from the Egyptians, when they evidently found it by direct observation themselves, as their unique calendar stone and records on preceding pages indicate. Apparently they, like the Egyptians, had two cults of priests who respectively calendared by observing the Sun and the Stars.

British "Clog Almanaks" Used Most About 1,000 Years Ago, Showing the Dot-counts then used by Europeans, like Mexican Dot-counts on Page 3.

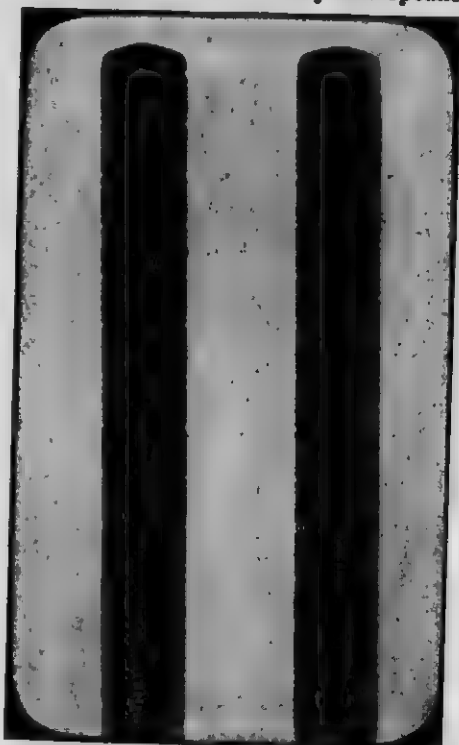


PLATE "6a." Photo-gravure of ANCIENT BRITISH "CLOG ALMANAK" usually carved on its 4 sides, about 18 inches long and 1 inch square at the ends; 13 deep cuts for Sundays began 13 weeks in each Quarter of the Almanak.

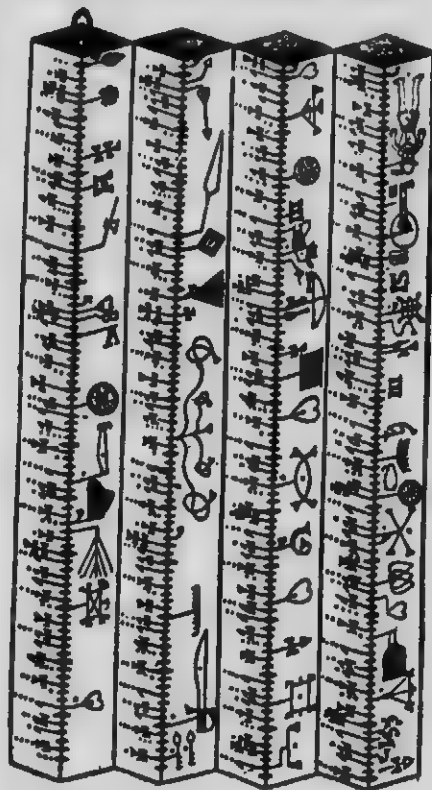


DIAGRAM OF ANCIENT BRITISH CLOG ALMANAK

PLATE 6 represents a "clog" or wood almanak, the original of which is preserved in the British Museum. The notches cut on the edges of this fixed-year log represent the sequential order of week days as they happen to have recurred during 1911. It registers fifty-three Sundays, including the first and last days of that typical year. The original is like nearly all others—a square stick with four long edges in which notches were cut to mark the days. Sundays were marked by deep notches. The same almanak was used for all years. In subsequent years, owing to the change of the day-names, Sunday was read as one or more notches from that registered in the fixed almanak as Sunday. For example, the permanent almanak shown in the illustration happens to exactly suit 1911, which began on a Sunday. In the year 1912 the "deep-cuts" would be read as Mondays, and so on down to "Leap day," February 29, after which they were read as Tuesdays, so two notches above the deep cuts were read as Sundays, because the extra day was then added to February. The four edges detailed the days for each of the four quarters. The hooks for 5, X for 10, and dots for units, on the left of each edge, indicated the golden-numbers of the Metonic Cycle for the yearly phases of the moon. The emblems on the right of the edge were hieroglyphics for Festivals which the abbot or priest announced on Sundays to their congregations.

New-year's Day is marked by the monthly up-cut "patulous." March 1 is marked by the harp of St. David and locates the Welsh festival. April 23, St. George's day, is marked by a lance. May-day is represented by a branch of May-blossom. Saint Peter's day has two keys. The inverted man signifies St. Edward's day, as he was crucified head downwards. Saint Crispin's day has two shoes, which mark the festival of the shoemaker's patron saint. There are many other signs that we have no space to explain here. The clog was suspended by the ring over the altar. The more secret "hith" producing agricultural signs were usually recorded on closely guarded private clogs, as the priests in the interests of their privileged class, discouraged such secular and easily understood signs as the "hay rake," shown on June 11, to locate hay harvest; the plough for ploughing time; the flail for thrashing; the ram sign for returning rams to ewes, etc. Those, if made public, would have enabled men to keep in close enough touch with the seasonal times of the year without attending church to hear the priest proclaim what should be done during the ensuing week. Obviously it was to the interest of the priests that people should attend church to be helped by the teaching of Christian principles, and in return help the church by their contributions.

For detailed description see pages 27-30 and 306-308 of "The Rational Almanak."

Calendar Declarations to Farmers, and in Churches Originated "Tithes."

CLOG (WOOD) ALMANAKS

15. The records of the early almanak-makers were in keeping with their necessarily crude methods of making observations. The "Clog" form most easily aided the ancient astronomers in maintaining the atmosphere of mystery with which they invested their "office." The Sarawak almanak-makers are shown marking the meridian progress of the shadow by means of pegs stuck into the ground, vide Plate 5. The distances between these pegs were being measured by sticks inscribed and notched with the sacred and secret markings of past generations of observers. Those records were treasured and handed down to successive generations of almanak-makers, who were urged to faithfully discharge that annual duty which ensured adequate food supplies and the prosperity of the whole tribe. For this service the farmers paid them in kind, making the payment in proportion with the success or otherwise of the crops. This mode of payment exists today, in an altered form, in the "tithes" which are collected by the Established Church in England from tenants of certain lands.

Plate 6 illustrates a "Clog" Almanak similar to other originals in the British Museum. There are rare examples of these ancient records in England, and they form an elaborate counterpart of the notched sticks used in Sarawak. How highly they are valued may be judged from the fact that the writer tried to buy one at an auction sale in 1905. The competing, and successful, purchaser represented a millionaire who had promised it as a present to his son on his twenty-first birthday. The writer was permitted to have a model made from the original.

16. The gradual association of almanak-making with religion is shown by the fact that the clog almanaks compiled for various districts were hung beside the high altars in Monasteries, Abbeys and Cathedrals, during the "Middle Ages" of History.

Every Sunday throughout the year the officiating priest would read from the "Clog" to the congregation, including the farmers, the festivals and agricultural operations that were to be faithfully observed during the coming week in order to promote the welfare of the community.

One cannot but admire the spirit which

moved the Church to associate the blessings of Nature with the weekly service at which the virtues of industry, good-fellowship, unselfishness and thankfulness were taught from the pulpit. In those simple communities, where the happiness of the whole depended upon the industry of every individual, there was a state of general happiness and well-being that is sadly lacking in the rushing selfishness of modern life in North America. Something approaching it is still to be found in Sweden, Norway, Denmark, Holland and Switzerland. It is not surprising, therefore, that every effort was made to keep the secrets that compelled the whole community to frequently meet together in common interest.

17. For this service to the community the church was paid tithes, or a tenth part of the produce of the cultivation of the soil. In olden days the tithes were paid in kind, so much wheat, barley, oats, etc., the tenth pig, the tenth calf. Naturally under this system there were many openings for bickering between the parson and the farmer.*

(*The late Sir Richard Tangye, the famous Birmingham engineer, describes in his autobiography a hand-to-hand struggle between the vicar and his mother over a pig that was claimed as tithes. The Tangyes were Quakers, and were therefore predisposed to question the right of the vicar to collect tithes from them.—Editor.)

Ultimately tithes were compounded into a form of money payments on a scale calculated by the market price of a quarter of wheat, barley, oats, etc., the previous year. The writer, before migrating to British Columbia, had the privilege of making the necessary calculations of these amounts for the Archbishopric of York.

Although the church no longer plays a direct part in advising farmers regarding the seasons, the privilege of collecting tithes has been jealously preserved. There are many places where land is covered by an ancient deed making the payment of tithes to the church a condition of tenancy.

MAYPOLES ORIGINALLY "GNOMONS"

18. The picturesque custom of dancing round the Maypole is another modern survival of ancient astronomy and Pagan ritual. In Northern Europe "gnomons," similar to that used in Sarawak, Borneo, were used to make seasonal observations.

Red Indian Methods of Calendaring the Seasons in Canada.

As in high latitudes beyond 48 degrees north, winter conditions were not favorable for weekly—much less daily—observations of shadows from such ordinary pole heights, the yearly observation was usually made about the 1st of May, when some clear weather could usually be relied upon, to enable local Almanak recorders to locate the Maypole's - noon - shadow's - length to check their "Clog-Almanak" register, to keep their yearly count of $365\frac{1}{4}$ days for public announcements in accord with the Sun's indications for each season. After the usefulness of locating the dates by means of shadows ceased, the worship of the Goddess Flora (Nature) was continued, and the use of the gnomon, or pole, which had been associated with this festival, was continued by the priests, as well as the collection of tithes. So the origin of the Maypole of today became obscured in the misty ages of the past. Most people in these days regard it merely as a survival of some Pagan festival.

(At Helston, in Cornwall, England, there is an annual festival in May called the Flora, during which the whole of the townspeople throw open their houses to permit a procession of dancers to enter at the front door and dance out at the back in their progress round the town. This is called the "Furry" dance. In the morning of that day it is the custom to go out and gather branches of the hawthorn which are just showing the new leaves.—Editor.)

May-pole shadows were measured by direct meridian lines like that shown for the Obelisk in Rome on Front-Plate G.

Generally the pioneer priests in North America had to cut a space clear of trees *due north* to allow the church flag-pole's shadow to indicate noon, and so re-time their watches before railways were invented.

Some farmers in Europe still continue to locate farmstead-noon by like meridian noon-marks on window-sills, floors or walls; and field-noon by "shadow-pins" the writer remembers seeing his grand-parents using.

INDIAN METHODS OF ALMANAK-MAKING

19. Now we come to a part of the story that is of special interest to dwellers on the North American Continent. Long before the old clog almanaks were used, and farther back than history or archaeology records the use of "gnomons," prehistoric men resorted to still more crude methods, like those still in use by the secretive North American Indians. The following is an account of the primitive Almanak method still employed by the Sarcee Indians, located on the Indian Reserve near Calgary, Alberta.

So zealously had their secret method been preserved, that neither the experienced Indian agent nor the watchful Archdeacon (who together had lived more than twenty-five years amongst those old warriors) had the slightest idea that the Indians ever used any other Almanak method than the white man's Calendars which "Big Plume," the former medicine-man had adopted, and so became a successful farmer.

That had caused jealousy and chagrin to arise in the minds of his less wise tribesmen, who still held the white man's methods in contempt—for had not the white men deprived them of their happy hunting grounds, the prairies. Therefore Big Plume, having thus, to their minds, turned traitor against their tribe, was deemed an outcast and ostracized by the Sarcees. Consequently "Bull's Head," their great old warrior chief, who had taken many scalps in the gory days before the Canadian Pacific Railway was built, had of necessity to take upon himself the onerous duties of tribal medicine man in declaring the season months of the year more privately than the ancient pontiffs and abbots used to declare them to early Europeans.

20. That tribal disagreement with "Big Plume," coupled with the fact that "Bull's Head," being ill and very old, thought that he was about to die, enabled the following record to be obtained:

Mr. Geo. Hudson, who had during more than thirty years been interpreter to the Sarcees, kindly offered to accompany me on January 25, 1908, to interpret a conversation with "Bull's Head," whose bottle of medicine we were taking. The old chief, being blind, did not notice our entrance to the room, where he reclined on a floor-bed praying, not as a Christian, but as a firm believer in the great Creator in whom the Indians earnestly believed before the white men came. That prayer, as interpreted, was both noble and impressive, he having that morning, like the patriarchs of old, divided his horses and cattle amongst his family preparatory to his anticipated departure to the "happy hunting grounds" of death.

21. But after a solemn interval the question was asked, through the interpreter, "How did the Sarcees know when to sow grain and tobacco before the white men came?"

"Bull's Head" snortingly replied, "By the Indian's own way!"

Red Indian Almanac Stick-counts

After being asked to explain that Indian way of locating the seasons, he expressed surprise at any white man coming prepared to believe that Indian ways were any good. The simple idea that Indian methods were worthy of the white man's consideration, when interpreted, seemed to animate the old warrior with renewed life and interest. Partly raising himself, he declared that Indians knew the seasons before the white men came.

He was then asked when the Sarcees began their old Indian year, but could not locate the time nearer than that it began with the great Sun Dance, which was held during the first quarter of the new moon following the first thunder of God after the winter snow had melted away—i.e., about April, when the spring thunder and rain begin.

22. He detailed how on that eventful morning the tribe assembled to watch for the sunrise, when the chosen virgin of the tribe (like the European May Queen) cried out directly the sun was half-disked on the horizon four prayers to the north, south, east and west points, and after declaring herself pure in life, promising to be truthful always, took the oath to the sun, and was then fastened in a wicker cage painted with the colors of the sun, yellow and red. In that she had to remain three days fasting, during which she was in complete authority over the tribe, who were feasting and dancing the sun dances around the pole, which they then erected and were required to maintain erect during three months till all the crops were sown.

During the three sacred days the virgin had to wear the "holy hat" and refrain from washing and scratching, always being in the cage. Throughout those three days the spring sun dances were kept up, whilst the "medicine man" led the songs for each dance, blessing the sun and saying "O Creator! have mercy on us; accept our offerings!" which were hung upon the central pole, finally praying that his tribe might all follow up the wisdom of their forefathers.

23. "Bull's Head" was then asked why they held those dances and why they had so many varieties? He replied that they were to impress the Sarcees, especially the young people, with the importance to the tribe of due observance of the seasons, according to the moons, which he read off as interpreted on the following table:

White Man's Month Names	Sarcee Indian Sacred Emblems for Months
April	Frog Moon.
May	Sprouting (of Green Leaves and Grass.)
June	Egg (Duck's) Moon.
July	Moulting (Duck's) Moon.
August	Flying (Duck's) Moon.
September	Running of the Deer.
October	Fall Moon.
November	Misty Moon.
December	Clear, Frosty Moon.
January	Great Moon.
February	Eagle Moon.
March	Goose Moon.

The practical utility of the Indian names for months is significant.

24. Upon being asked how they kept records of the days in each month, "Bull's Head" replied that they always counted 30 (as did the Ancient Egyptians and Druids) to every month, and that it was the medicine man's duty to keep record of them by each morning taking a stick from the days-to-come bundle and adding it to the days-past bundle. Those sticks (shown in the interpreter's arm, on Plate 9) were carefully scraped twigs of the "pussy" willows, which by their silvery catkins show the first sign of growth in the spring season.

Next he was asked whether he had any of those sticks, when he, with evident delight, leaned back on his couch, and reaching under the far side of the bed, produced two bundles, explaining that they only kept 150 sticks for five months, as their method was to use 30 each for the first two months after the spring thunder, but the thirty for the middle (third) month they always split into two parts of 15 each, so that after the first 15 days of that moon were passed they knew that it was midsummer, and then held their greatest sun dance (about June 10 to July 10, according to the moon's range).

After that 15th day the remaining 15 days were counted, as usual, by daily withdrawing one stick from the "unused" to insert it in the "used" bundle, leaving the former to show the remaining days of the Egg (June) month, as illustrated on page 6.

25. The last two bundles of 30 days each served for July and August, after which the last bundle was used again for September, their sixth, or odd, month, during which the great deer hunts took place.

(The Sarcees thus separately derived and combined the 5 months count of Noah and the 6th month count Jacob invented.)

Afterwards the whole five bundles were

41 Five-month Counts Extended to Six Months (Jacob's "Years")

used again, one for October, one for November, and the middle (third) one being again split at the 15th day to locate mid-winter, when the sun floats lowest across the sky—and so forth till February ended the eleventh moon, followed by the odd twelfth Goose Moon (March), which generally seemed to be nearly a quarter of a moon longer, till about every third or fourth year the great thunder and rain seemed to be mysteriously delayed till after a thirteenth moon was counted. Then the medicine man had to hold his last bundle of 30 to count over a second time, as the great spirit required that repetition to make them remember.

26. Therefore the chief, with the medicine man and elders of the tribe, knew that it was advisable to repeat the dances for the whole series of twelve moons each spring-time to impress their usefulness upon the minds of the growing generation. With that object the dances were made attractive, not only by bringing young and adult people together in joyous revelry, but by further using ornamental head-dresses and emblems distinctly hung upon the central sun pole during each of the twelve spring festival dances.

Upon being asked where those emblems were, "Bull's Head" replied that "Big Plume," their old medicine man, still kept them secreted, because when a young man he had given lots of horses and cattle for the privilege of holding that high office over the tribe, and as the tribe had become poor they could not raise sufficient to buy them back.

He added that "Big Plume" had the emblems for each dance and month in the sacred bag made of hide, but would not be able to show it to anybody, not even a red man, till the great thunder of spring, when it took three days to open it, according to the traditions of the red men, as a distinct ceremony should precede the production of each, though "Big Plume" had not exercised due care and dignity in displaying them to the tribesmen each spring.

THE OLD SQUAW DANCES WITH DELIGHT

27. Being requested, through the interpreter, to explain those dances, the old warrior, "Bull's Head"—whose name was probably derived from his massive head and great breadth of chest, denoting great strength—brightened up and began chanting the words sung at those great dances held so beneficially during his youth. The weird, wavy, musical notes recalled those

happy days to his squaw, who had been deeply interested in the conversation passed through the interpreter. She, though very aged and haggard in appearance, rose to her feet, and joining in the song led by "Bull's Head," began to trip and twirl about the floor in such grotesque gyrations, representing their old dances, that it was difficult for the writer to refrain from smiling, when all was taken so literally by them and the second Squaw present. The stiff efforts towards making what should have been graceful twists and curves were, with the squeaky voice of the Squaw, very comical.

They all seemed so happy and pleased that any white man could appreciate good in their tribal ways that "Bull's Head" offered to give the writer the five bundles of almanak day-recording sticks, and Mr. Hudson most kindly presented the horns of the last buffalo killed by the tribe, and a piece of the last elk's horn they had found.



PLATE 9.—The Sarcée interpreter holding the "pussy" willow almanak sticks, which had been given to Mr. Cotsworth by Bull's Head. The strange objects hung on the line are the entrails of cattle being dried to form skins for sausages.

28. Leaving those aged Indians happy by simple appreciation and the gift of some almanak signs on literature, the next evidence sought was to discover and, if possible, see the "sacred bag" secluded by the wily "Big Plume," who lived about sixteen miles away.

We found that "Big Plume" had some unjust grudge against the interpreter, who therefore could not be used just then, so the Rev. Archdeacon Tims (who had resided on the Sarcée Reserve about twenty-five

Red Indian Sacred Monthly Emblems

years conducting a mission) very kindly undertook to go as interpreter with the writer.

On arrival at the medicine man's ranch we cautiously questioned "Big Plume" concerning the sacred bag, which he first declined all knowledge of, but on being told that we had come direct from "Bull's Head's" place to see it, he very reluctantly and evasively replied that it was absolutely impossible for any white-man to be allowed to see it, because Indians only could see the emblems during the great three days' festival immediately following the spring thunder.

29. As the month of January was passing, all Indians must patiently wait till then. White men could not be allowed to see it.

But as the writer had to go to Europe there was no possibility of his being present, even if disguised as an Indian. So, after a tedious harangue to test "Big Plume's" vulnerability, the writer, having noticed the elaborate defence of "Big Plume"—who held that bad luck would follow the tribe if any white man saw the contents of the sacred bag—suggested that no harm could result from letting the faithful archdeacon, as the twenty-five years' trusted adviser of the tribe, see the "outside" of the bag. To that extent he relented, and brought forth the precious bag, at which we were privileged to peep, whilst he explained that it contained the old flint arrowheads and other relics of the tribe, along with the emblems.



PLATE 10.—Big Plume's squaw disclosing the Sarcee's sacred bag, containing the festive emblems for the respective months of each year as described in paragraph 31.

30. The writer's previous experience amongst the wily Arabs in Syria, and other tribes in America, led him to ask whether "Big Plume" (who was known as being keen to earn dollars) believed that bad results would come to him and his tribe if a stranger looked in, found the bag, and simply looked at the emblems whilst he and his family were away. He thought not.

He next was asked what harm could result if, while he was asleep, his squaw took the bag outside to dust the emblems in order to preserve them, when, say, the archdeacon and writer might be coming round the corner of his house and see the emblems—especially if "Big Plume," on waking, should realize the happy dream that some then useful dollar notes had been mysteriously found for his benefit, as the result of sleeping while we saw the bag and its contents?

He seemed to like the idea of the dollar notes coming so easily; could not see that much harm would result if he did not order the bag to be taken out. In fact, his squaw had to do that when cleaning the house and airing the bed on fine, sunny days. He feigned weariness, and said that he was prepared to go to sleep then and there, whilst his squaw knew her housekeeping part of the business.

CONTENTS OF THE SACRED BAG DISCLOSED BY THE SQUAW

31. She certainly did, and plainly intimated that, while he was going to have the easy part by going to sleep (or pretending to), she should have some dollars for her own use, because she would be taking the responsibility of disclosing the contents of the bag to our gaze.

After a little bargaining, the dollars asked for were agreed upon, provided that she would give the writer the black-stone pipe she was smoking—after being photographed smoking it whilst holding the bag exposed, as shown in the photo.

RED INDIANS COULD NOT FIND THE LENGTH OF THE YEAR BY MOON COUNTS

32. The most important fact gathered during those searches for almanak records amongst the Sarcees and other American Indians, in both the United States and Canada, is that until missionaries brought the European almanaks for their use they had not been able to find out for themselves any definite measure of the year's length, nor any fixed register closer than the 29½ days' range of moon-counted year-closing-dates.

Egyptian Calendar copied by Romans, who handed it down to Europeans

The Moon's over-awing phases, recurring differently each 19 Springs, so misled them that they could not precisely locate either the beginning or the end of the Solar Year, without erecting Sun-gauging observatories to guide them to the true commencement of the seasons, especially at the Spring Equinox, when most needed to gain better crops.

Though their ancestors had during many centuries developed a higher civilization than the now demoralized type of Indian experiences, having formerly well-established trading ~~ways~~ over 3,000 miles long, from the St. Lawrence into the Northwest Territories, their abundance of animal and fish foods had tended to keep them simply as nomadic hunters and pastoral tribes for whose guidance the rough approximations of the seasons counted by the 30 day-units nearest to 29.53 days in lunar months sufficed, so long as Indians were sparsely scattered over the vast prairies and roved about fishing and hunting.

The commencement of their years varied very much like the church years beginning with Easter have foolishly been so long oscillated between the 22nd of March and 25th of April by European churches.

During the curious accounting arrangement of the "ecclesiastical year" ending Easter, 1907, there were only 50 Sundays, whereas during the next (1908) year 55 Sundays intervened, and the collections were 10 per cent. larger; but 1909, with 51 Sundays, showed a corresponding shrinkage—because Easter was allowed to drift backwards and forwards with the moon.

The foregoing notes regarding some of the interesting phases in the evolution of our Almanaks and Calendars are recorded to enable readers to appreciate the great practical every-day value of the Calendar, which was derived through the stupendous labors of the Egyptian Pyramid Builders to increase their needed food and to prevent their enemies from stealing the fertile yearly irrigatable land adjoining the Nile, which grows about three crops per year without any manuring as the Nile mud serves better—provided that the tillers of that soil are duly instructed concerning the best times to sow each kind of seed and the precise Calendar days upon which they must perform the necessary operations to ensure fullest crops.

That instruction farmers now freely derive from printed Calendars such as that condensed on Fore-plate J2. But during the Pyramid Era the secret possession by Egyptian Rulers of that most valuable Calendar knowledge they were the first to precisely discover, after the most strenuous efforts of building their stupendous Sundials, (the Pyramids), gave them the greatest advantage over their enemies. As that supreme advantage would have been jeopardized if their secret guide of the daily register by Pyramid shadows had been divulged to their enemies, that vital knowledge was (like the secret code of the British Navy) reserved exclusively for the eyes of the Pyramid Priests who governed the people, in all affairs of the Calendar, commanding the daily agricultural operations to be done in the name of Pharaoh, to grow ample food to maintain the nation.

Gradually pyramid astronomy by study of shadows became obsolete on finding that better almanak results could be derived from direct observations of the stars, which had the further immense advantage of being locatable wherever the observer might be, whereas Pyramid observations could only be made at the foot of the Pyramid they could not move. But the key to star astronomy was the older system of pyramid shadow observation, by which the length of the year was discovered and later used to develop Star Astronomy.

During the 19th Century more convenient watches put Sundials almost out of use. —Similarly the easier "Star Astronomy" has, during about 3,000 years, relegated the Pyramid-shadow-method into oblivion.

While the Egyptians and Israelites had long before derived the 12 months year, the scattered nations and tribes of Europe used notched-sticks to tally 5, 6 and 10 moon "years" until Numa, the Roman king during the 7th century before Christ, added January and February months to make 12, alternating 29 and 30 days with the moon, totalling only 354 days per year.

Various adjustments were tried during the next 600 years, after which Julius Caesar wisely determined to adopt the Egyptian FIXED year of 365 days, but unfortunately failed to adopt their equal months.

JULIUS CAESAR, in 46 B.C.—REJECTING the EQUAL-30-DAY-MONTHS, which SOSIGENES rightly ADVISED.



The Egyptian Astronomer, Sosigenes, when commanded by Julius Caesar to devise a Yearly Calendar of Days—to replace the Roman Moon-MONTHS of 30 days each, with 5 non-month Festival Days ending the Year. Unfortunately for Europeans, Julius Caesar, sharing the Roman belief that "odd numbers were lucky," removed the 30th day from February along with the 5 Egyptian Festival Days, and spread them as the 31st days of January, March, May, July, September and November. We may imagine Julius Caesar saying: "Do you expect me as Ruler of the Mightiest Empire the world has known, to simply copy so 'rom the conquered Egyptians? The Roman people believe that 'odd-numbers are lucky.' That foolish belief arose through Romans being paid monthly. Their "odd-numbered" 29-day-months were "lucky" by bringing the same pay as for working alternate 30-day months.

JULIUS CAESAR started all our YEARS NINE DAYS LATE

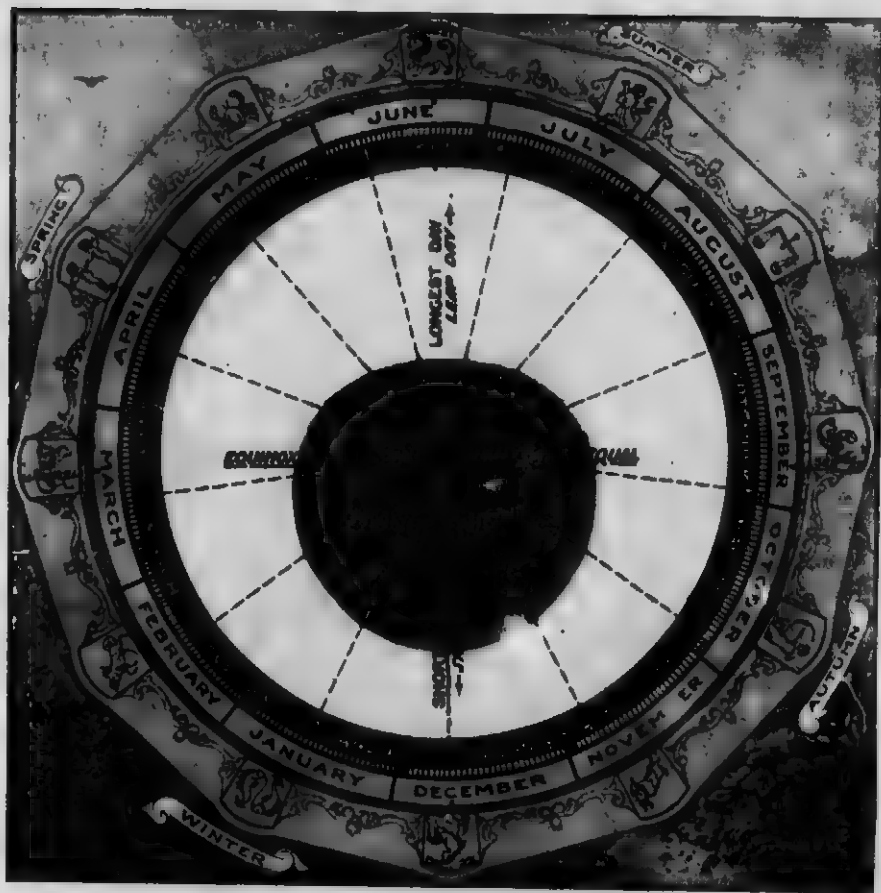


PLATE II. The CYCLE of OUR YEAR indicated by black-lettered MONTHS (now geared 9 days after the Seasons), outside the 365 Day-cogs' circle, within which—geared to begin with the Seasons—are named the suggested 12 EQUAL MONTHS of 4 weeks each. The proportional Lengths of Day and Night at month-ends are indicated by the lengths of the ray-lines traversing the white space during the Day, and through the dark apple-shaped space to the focus of these ray-lines measuring Night-time, between sunset and sunrise.

A primal defect in our Calendar's record of the Year and Seasons is that of being out-of-gear with Nature's Year and Seasons it is supposed to register. They End on the Winter Solstice (December 22) whence Days increase in length by daily accelerated ratio until the Equinoxes, when Day and Night become Equal, and the daily increase in daylight is about 365 times greater than at both the Shortest and Longest Days. Towards June 21st the inter-day-extension diminishes, and thence the Day's length becomes reduced in corresponding ratios expanded most at the September Equinoxes, whence they decrease to the "Shortest-day," Dec. 22.

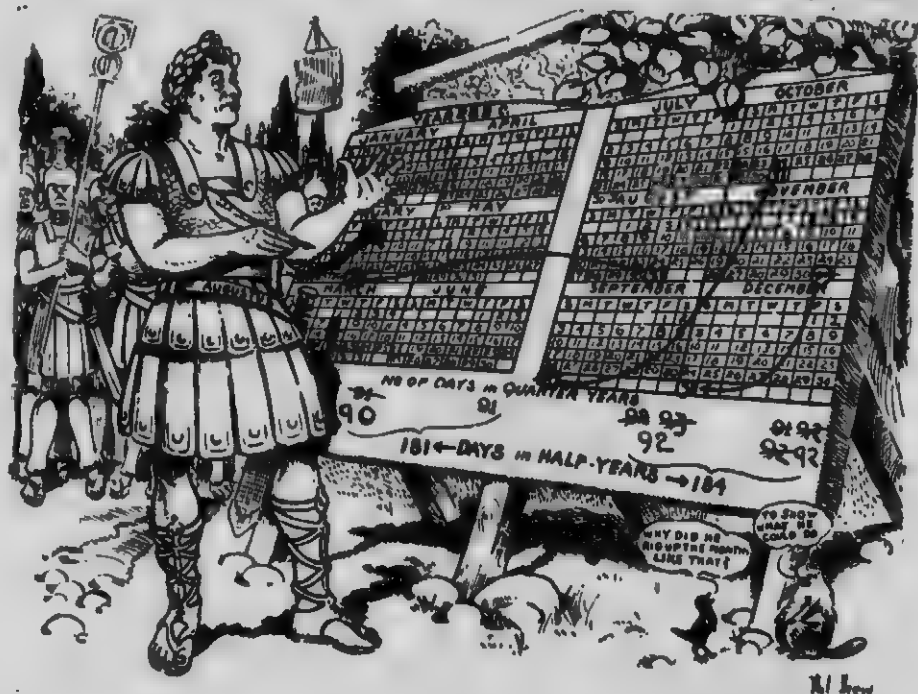
Consequently our Calendars begin 9 days after Nature's Year which is always symmetrical, whereas our Civil Year is skewed 9 days late, and drags along 9 days behind Nature's cycle.

When Julius Caesar found the Roman Calendar (from which ours was derived) about ninety days out-of-gear with the Seasons through the drifting of the Lunar Calendars the Romans used until the year 46 B.C., he (like the Chinese Government are now doing) determined to abandon the shifting Lunar Calendar, which could not then be kept so near to the Seasons for Agricultural uses as the Chinese, by modern printing of agricultural instructions for each day in their elaborate Calendars, have been able to approximate very nearly.

After learning the superior advantages the Egyptians enjoyed through their FIXED CALENDAR of 365 days, Julius Caesar varying the advice of Sosigenes, the Egyptian Astronomer, decided to adopt the fixed year of alternate 31 and 30-day months, ending February with 29. But as the people of the Roman Empire did not gain the 7-day week till Constantine the Great decreed it 366 years later, they then necessarily used the Moon as their most practical guide to the passing days each month. To meet that necessity, Julius Caesar decreed that the Julian Era of Fixed 365-day Years must begin "with the first new moon that shows after the Winter Solstice."

Simply because that moon happened to rise nine days after the Shortest Day, European Years have since then lagged and jogged along nine days behind Nature's cycling Year. But had that moon arisen on December 22nd, our Years would have been geared with Nature's, from which we have been diverted through ancient ancestors being compelled to accept the moon instead of the sun as their guide for passing days, before they ascertained the year's length.

Augustus Caesar spoiled Julius Caesar's alternate 30 and 31-day months



Copyright 1910 by H. H. New

Plate 13

AUGUSTUS CAESAR (1940 years ago) RIGGING UP and MUDDLING our MONTHS
THE PRESUMPTUOUS PRIDE AND ARROGANCE OF AUGUSTUS WAS THE ENTIRE CAUSE OF THE LENGTH OF
FEBRUARY, AUGUST, SEPTEMBER, OCTOBER AND NOVEMBER BEING ARBITRARILY
FIXED BY THOSE THREE STROKES OF HIS PEN—SEE PAR. 6

That our annually changing calendars of unequal months, fixed by Augustus Caesar, will soon be replaced by one permanent "year" with equal months of four complete weeks each, is increasingly evidenced by the resolutions in favor of Calendar reform passed by the International Congress of Chambers of Commerce, financial and educational authorities in the various countries of Europe and America, who with the learned societies have urged the most powerful governments to assemble the forthcoming official Conference of International Representatives to consider the various proposals for Calendar reform, and finally recommend what is best to be done in the interests of humanity.

2. While our changing yearly calendar is accurate in recording the full number of days in each year, and sufficed for ancient nations, the unequal months, with troublesome alterations of week-day names for every monthly date, causes much needless inconvenience to us all, now that business and social conditions have vastly changed

since the Caesars ruled the people of Europe, Africa and Western Asia.

3. When Julius Caesar was raised to power, nearly 2,000 years ago, he (like the President of the newly-formed Republic of China) felt the need of a FIXED Calendar. The Roman calendar in the year 46 B. C. was about three months out of gear with the seasons, because the Pontiffs had been forced by powerful governors to falsify the calendar rolls to extend their periods of office. The names of the people had no check on their calendars, which, like the Chinese "lunations," were based upon the moon's ever-varying cycle of days, from whence our months are derived.

The Chinese calendar wanders only about one month from the solar seasons now, just as Easter and other festivals of the Christian church "wander" according to whether there are twelve or thirteen new moons in the year. But that variation of an extra moon each third year is a potent cause of famines and poverty as exemplified

Julius Caesar's Reform of the Calendar

by the famines in Ireland which resulted when the earliest Easters led to planting potatoes, etc., too soon, thereby causing the young shoots to be cut off by frosts, which also blighted other early Easter-corn crops.

4. To safeguard the food supply and welfare of the nation, Julius Caesar considering that a fixed solar calendar, like that of the Egyptians, was necessary to ensure national stability, wisely ignored the schemes of the Pontiffs and others, as he knew that the services of one thoroughly practical astronomer, trained to provide the best solar calendar information for the guidance of all engaged in agricultural work, was worth more than the divided opinions of the Pontiffs and a host of other theorists—simply chose Sosigenes, the Egyptian, as the best man available. Julius Caesar commanded him to suggest a fixed solar calendar for the Romans—who then had not our seven-day week, which regulates the civil affairs of most nations. Now the week forms the essential basis to rearrange months to complete calendar reform.

JULIUS CAESAR'S REFORM

"Caesar's arrangement was substantially the same as the reform of the Egyptian Calendar in the year 238 B. C. under Ptolemy III Euergetes, a fact which remained unknown until the discovery of the Decree of Canopus by Lepsius at Sanor Taxis in Egypt in the year 1866." *Enc. Brit. XXII, p. 276.*

That Egyptian Reform, probably due to the Observations of Eratosthenes, was copied by Julius Caesar so far as "fixity" was concerned but he failed to copy their equal 30 day months, as depicted opposite, on the cartoon.

Most people erroneously believe that Julius Caesar originated the calendar of 365 fixed dates in each year, whereas he copied it from the Egyptians, who by their stupendous pyramid labors discovered the fixed recurring seasons of the year, and thereby conferred the supreme benefit of a fixed 365-days-repeating year to guide the seasonal work of humanity.

To Julius Caesar belongs the credit of being the practical statesman who raised the Romans and other Europeans to greater prosperity by adopting the fixed lengths of permanent months and the 365-day year to replace the ancient moon-wandering calendars—just as the Chinese are now preparing to discard their mystifying lunar calendars.

Sosigenes advised months of 30 days, but when Caesar insisted upon having odd-numbers to make "lucky-months," Sosigenes reluctantly suggested that, to be easily re-

membered, the odd numbered months be given thirty-one days each, and the even months thirty days each, with the exception of February, which then ended the year. It was to have the remaining twenty-nine days to complete the 365 days of the year then first permanently fixed for Europeans by the Romans.

That less desirable allocation of the then fixed twelve months was enforced by Julius Caesar. It's fixity established such widespread benefits throughout the Roman Empire that it brought more permanent glory to his name than his mighty conquests.

6. After his death, Augustus Caesar, being jealous of the noble reputation Julius Caesar had earned by that beneficial reform, declined to allow the Senate to give the Augustian name to August (then called Sextilis), until they extended its days from thirty to thirty-one by taking away the twenty-ninth day from February. Then the bankers complained that Augustus had spoiled their quarterly periods for interest by leaving ninety days in the first quarter and ninety-three days in the third quarter. Augustus was too proud to put February 29th back, so to reduce the 3rd Quarter to its 92 days, he removed the 31st day of September to make the 31st of October. On being advised that the latter day should have been made the 31st day of December he ordered the 31st of November to be removed to make the 31st of December. Thus the presumptuous pride and arrogance of Augustus Caesar arbitrarily decided the lengths of February, August, September, October, November, and December, to which our ancestors and ourselves have servilely submitted during 1,940 years, without considering the many inconveniences which these clumsy months inflict on us all. We have grown up encumbered by Augustan month-jagged shackles.

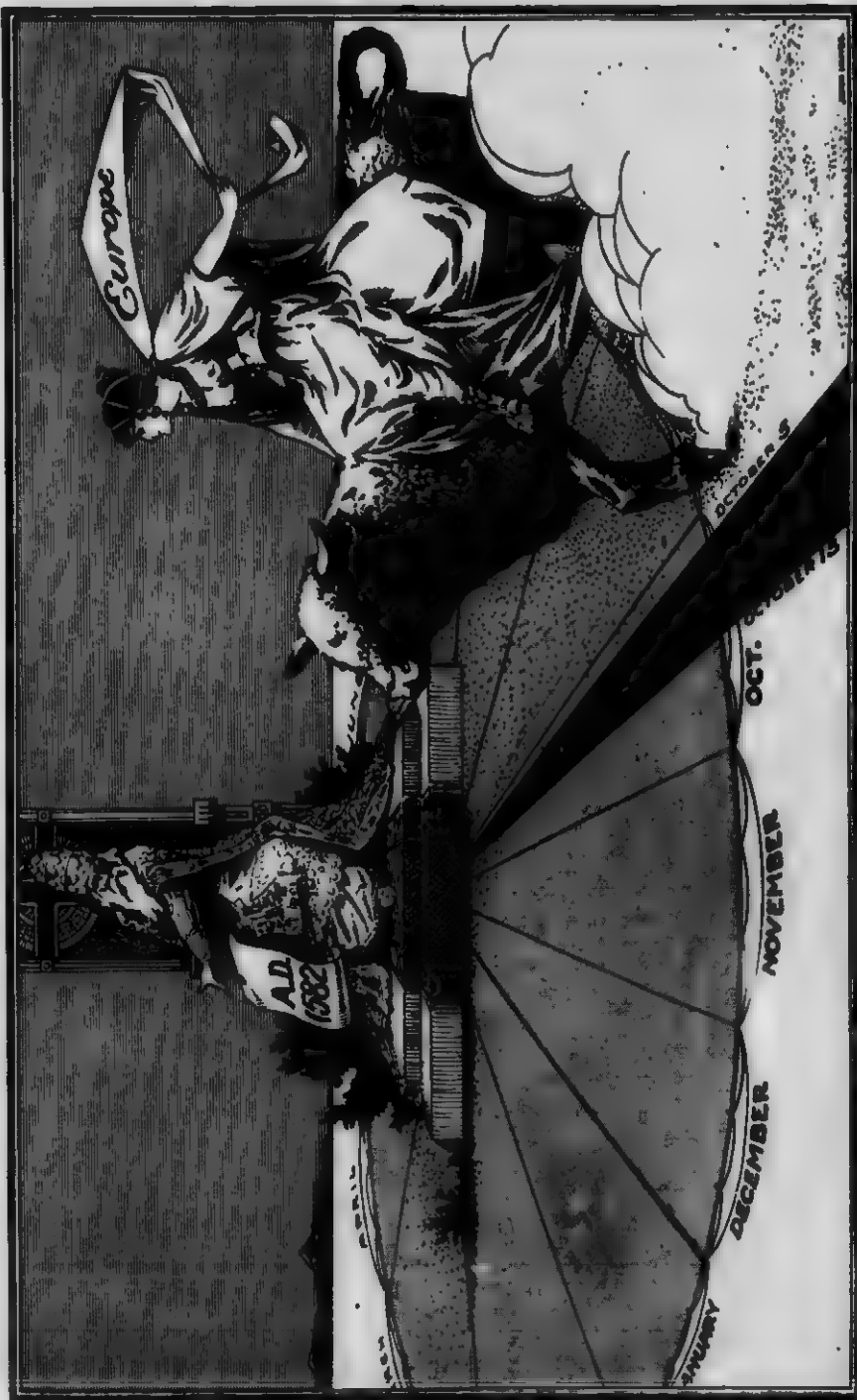
7. When the twenty-eight to thirty-one day lengths of our months were selfishly fixed by Augustus, Europeans were mostly slaves, commerce was in its infancy, and commodities had to be hauled along roads or carried in galleys—all since replaced by railways, steamships and other means of rapid transportation in every country.

The enormous expense of manufactures and trade, with the multiplication of domestic and social needs, now necessitate innumerable references to calendars by everybody, whereas the masses of Roman slaves did not have any calendars, which were only possessed by the ruling Pontiffs. Probably less than an average of one person per hundred thousand then obtained permission to see the permanent wooden or

THROUGH MISTAKES made by Roman Caesars, UNEQUAL MONTHS were IMPOSED UPON MOST NATIONS

The EGYPTIAN CALENDAR of 12 equal months was perfected by generations of Pharaohs, and is still wisely used by Egyptians.		The JULIAN CALENDAR of 12 months alternately 31 and 30 days long caused unequal months when Julius Caesar misapplied from the Egyptians. He distributed their year-closing days as the 31st day of January, March, May, July, Sept. and Nov.		The AUGUSTAN CALENDAR was the Julian re-shuffled by Augustus. He moved Feb. 29 to Aug. 31, Sep. 31 to Oct. 31, and Nov. 31 to Dec. 31, to satisfy his overweening pride in having 31 days in his birth-month (August). That made half-years unequal.		CONSTANTINE the GREAT established the rest-fiving Sunday with the WEEK of 7 DAYS which erratically divides our months because the Caesars made months unequal. The week caused the "odd-day" beyond the 52 weeks each year, which moves Day-names and changes working values of dates and months.		THE YEARLAL TO FIX Permanent week-day names to 365 days in every year. The 365th as "Skip-day," after 364 are divided into 13 Equal-months of 4 weeks, ending on the 7th, 14th, 21st and 28th.	
EQUAL MONTHS since 5000 years ago.		Lengths of MONTHS from 46 to 28 B.C.		Lengths of MONTHS imposed upon Europeans since 28 B.C.		WEEKS re-adding MONTHS incessantly since 321 A.D.		EQUAL MONTHS from 1918 A.D.	
<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>	
ALL		THIR		MONTHS		MAID		4 COMPLETE WEEKS, BEGINNING CONSTANT DAY-NAMES FOR EACH RESPECTIVE DATE	
<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>		<div>12345678910111213141516171819202122232425262728293031</div>	
30 DAYS, DIVIDED INTO 3		30 DAYS, DIVIDED INTO 3		30 DAYS, DIVIDED INTO 3		30 DAYS, DIVIDED INTO 3		30 DAYS, DIVIDED INTO 3	
DECADS OF 10 DAYS EACH		DECADS OF 10 DAYS EACH		DECADS OF 10 DAYS EACH		DECADS OF 10 DAYS EACH		DECADS OF 10 DAYS EACH	
<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>	
The 12 last-days of the Year are kept apart from months		The 12 last-days of the Year are kept apart from months		The 12 last-days of the Year are kept apart from months		The 12 last-days of the Year are kept apart from months		The 12 last-days of the Year are kept apart from months	
<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>		<div>123456789101112131415161718192021222324252627282930</div>	
No more unequal months after 1918		No more unequal months after 1918		No more unequal months after 1918		No more unequal months after 1918		No more unequal months after 1918	

In the Year 1582, POPE GREGORY the XIIIth ALTERED the JULIAN CALENDAR to the GREGORIAN, for Europe.



He ordered the 10 days between the 5th and 15th of October to be *struck out* of the Calendar for the year 1582 only, in order that the 10 days accumulated through Julius Caesar's error governing "Leap-Days" might be adjusted to restore the 21st day of March to accord with the Equinox, and thereby the Calendar with the Seasons. Unfortunately he moved the Christian Year's End (which from the establishment of the Christian Era had been celebrated at Christmas) from Dec. 25th to Jan. 1st—one week further away from Nature's Year's-end on Dec. 22nd. Russia and Greece have not complied.

Pope Gregory the XIIIth Missed His Greatest Opportunity

As Plate 11 demonstrates, Julius Caesar began the Year 1 of his "Julian" Era 9 days after nature's year ended on Dec. 22nd. His Jan. 1st, then necessarily located by the new moon as the widest known indicator, was where our Dec. 31st is.

Next Augustus Caesar, vide Plate 12, moved Nov. 31st to Dec. 31st, thus perversely inserting the 10th day between Nature's year-end and ours.

Fortunately that defect can very easily be remedied, by leaving out the last 10 days of the Pre-Reform year, as Pope Gregory the Great so readily skipped from the 5th to the 15th October, 1582, as cartooned opposite.

The factor that appears to have retarded the success of Pope Gregory's Reform was his failure to readjust that reforming year's end to accord with Nature's indication on the Shortest Day, by closing up the 10 days between Dec. 22nd and January 1st, which all Europeans could have better understood and would have readily accepted as the natural adjustment of the year.

Pope Gregory the XIIIth's retrograde terminal demand appended to his right decree to leave out 10 days aroused opposition and retarded that reform, by his misfit proposal to divert the Church's "New Year" from Christmas (Dec. 25th) to Jan. 1st, to accord with the Julian New Year, which would have been better reverted to Dec. 23rd to follow Nature's year, always expiring on the Shortest Day—Dec. 22nd.

By sundering New Year's Day 7 days further away from the old Yuletide (Dec. 22nd), so dear in home-reviving memories to the stalwart Protestants of Northern Europe—harm was done to that well-intended Reform.

That was unfortunately pressed by the Roman Catholic Hierarchy during the then current Anti-Catholic Reformation period, when it naturally aroused the suspicions of Northern Europe that some ulterior ecclesiastical advantage was being sought by the Papacy, when apparently the better course would have been to have ended 1582, as the year of Calendar Reform, on the Shortest Day instead of increasing the 3 days lagging of Christmas behind Nature's year-end by 6 days more to end our years on Dec. 31st.

There was no basis for that suspicion which caused the Protestant parts of North-Western Europe to delay the revision of their Calendars till 1700, when 11 days

were dropped out, as Great Britain and Ireland last of all left out 11 days in Sept., 1752, after experiencing 170 years of dual-date reckonings in European trade.

Western Europeans trading with Russia and other Eastern nations of Europe and Asia now differ 13 days, because Russia, Greece and the Greek Church countries of Bulgaria, Roumania, etc., still persist in ignoring the Gregorian adjustment—which thus so largely failed, because of that lack of discernment entailing the forcing of the civil year further behind Nature's year-end.

Pope Gregory and the Vatican rightly left out the 10 days, but made the mistake of expunging them from October, instead of adjusting the Gregorian Year's end to close with Nature's Year on the "Shortest Day," and permanently Fixing Easter.

While none of the nations had any serious difficulty in leaving out the 10 days at any period of the year they chose to adjust by new Calendars—although printing was very rare, and only in its infancy—they did not like the idea of closing out the 10 days in October, because neither their wishes nor convenience had been consulted; consequently France, while convinced that 10 days should be left out, decided to assert its independence by calendaring the 10th Dec. as the 20th.

The "Low Countries," now Holland, Belgium and parts of Germany, for like reason more appropriately decided to eliminate the last 10 days of their year by naming the 15th of Dec. as the 25th for Christmas Day still ended the year in most European countries.

In England until the Norman Conquest in 1066 A.D., they began their years in some Saxon Kingdoms on March 25th and in others on their old Yuletide, December 25th.

Similarly in Germany, till 1544, their years began at Christmas.

From the earliest Christian period the years, according to which Papal Bulls have been dated, have always, as now, commenced with Christmas.

In Rome, the greater part of Italy and Southern Europe, the years began on December 25th, until Pope Gregory reformed the year in 1582, when he proclaimed the 1st January as the 1st day of the year (vide Cath. Ency., Vol. III, "Chronology").

EASTER and ALL FESTIVALS can EASILY be FIXED by USE of the "SKIP-DAY"

Pope Gregory the XIIIth had to overcome the Pre-Reformation ignorance and prejudice prevailing among the masses of European vassals in 1582 when he unfortunately decided to regulate the fluctuations of Easter "by establishing a fictitious moon, which is purposely made to depart from the place of the true Moon, in order to prevent the coincidence of the Christian Paschal Feast with that of the Jews" (see "Calendar" in the Century Dictionary).

Had Pope Gregory been able to FIX EASTER, as the forth-coming International Conference will almost certainly recommend the Nations to do, he would have conferred a yearly world-wide boon upon all Christian people.

That Conference, by bringing Fixed Easters into operation will thus remove the worst cause of disputes, controversies and dissensions which has afflicted and sundered Christian Churches from the earliest times.—Therefore it is all the more incumbent upon the more enlightened leaders of the Church Councils in this 20th Century, to notify the President of the United States in advance for the impending Conference, of their willingness to accept FIXED DATES for ALL FESTIVALS.

The two great reasons which probably prevented Pope Gregory from fixing them in the year 1582 were, 1st, the then general use of the Moon by the common people for locating Festivals, Feasts, Fairs, &c., before printed Calendars became available; and 2nd, the secret pressure exerted by the privileged persons who held the highly profitable monopolies for providing Calendars in different countries—and were partly dependent upon the Vatican for information which was indirectly of financial benefit to the Church.

Now all Church difficulties in those directions have been removed, as readers of pages 13 to 22 of the "Rational Almanak" may see.

Even the Church of England's custom of varying the Psalms for different dates can be easily met, as "R. A." page 16 shows, by applying the numbers of the proposed months, plus 7, 14 and 21 to use on the proposed fixed Sundays.

Since the writing of that advocacy for Fixing Easter 19 years ago, the proposal has been welcomed by the masses of the people in nearly every country, in terms similar to the following, reprinted from that

leading British newspaper, "The Times," on 17th April, 1914:

"Is it not more evident year by year that 'a deplorable blunder has been made in fixing the first national spring holiday on 'the most solemn fast day of the national Church? In almost every pulpit today '(Good Friday) severe references are 'made to holiday folk who spend the day 'in the open air. In reality a great injury 'is done to the closely-pent population of 'the towns by ear-marking one of their rare 'days of rest for a devotional celebration so 'highly pitched that but few comparatively 'can set themselves in tune to it.

"It is entirely untrue that the bulk of 'the holiday crowds are either hostile or 'indifferent to the purposes of this great 'memorial day. On the contrary, it is real 'distress to many earnest religious people 'to be branded as disloyal because they 'make use of an opportunity for getting air, 'exercise and variety in their cramped lives. 'They know in their hearts, whatever the 'preachers may say, that they are doing no 'wrong, yet it sits heavy on them to seem 'to set their Master at naught. The in- 'convenience of shifting the date of the 'public holidays at this season to meet the 'tradition of the Church has frequently 'been commented on, and an early Easter 'is generally unpopular.

"It would obviate the religious difficulty 'and suit public convenience if the public 'holiday were fixed for a late date in April. 'Few but the leisured attend such services 'as last from 12 to 3 on that day; for the 'others early morning and evening services 'would suffice. The poignant contrasts 'now observable would be done away, the 'Church would no longer be scandalized 'by flagrant disregard of a sacred anniver- 'sary, and the faint touch of guilt which 'for many conscientious people damps the 'joy of their spring day in the open would 'be wiped away. Why should not the 'April public holiday extend from Friday 'to Monday inclusive?"

The Catholic Ency. III, p. 160, reads: "The Council of Nicæa is believed to 'have determined that Easter was to be 'celebrated on the 1st Sunday after the 1st 'Full Moon which follows the Spring 'Equinox.—According to this Rule, which 'has ever since been accepted, the earliest 'day upon which Easter can fall is March '22nd and the latest April 25th."

And
causing
a g—T

Range
of
Dates

Mon. 31
32
33
34
35
36
37
38
39
40
41

April 1

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

Total 36
Days
Temper

Plate

1913
avera
early
durin
most
brigh
sarily

only
Moon
etc.,
exper

Inter
or A
of th
locat

Another of the ABSURDITIES and ANOMALIES of our CALENDARS

causing "Father Time" some hazardous jumps, spoiling our holidays and church finances. e.g.—The year 1907 had only 50 Sundays between Easter, but 1908 had 55 Sundays with 10% more Collections.

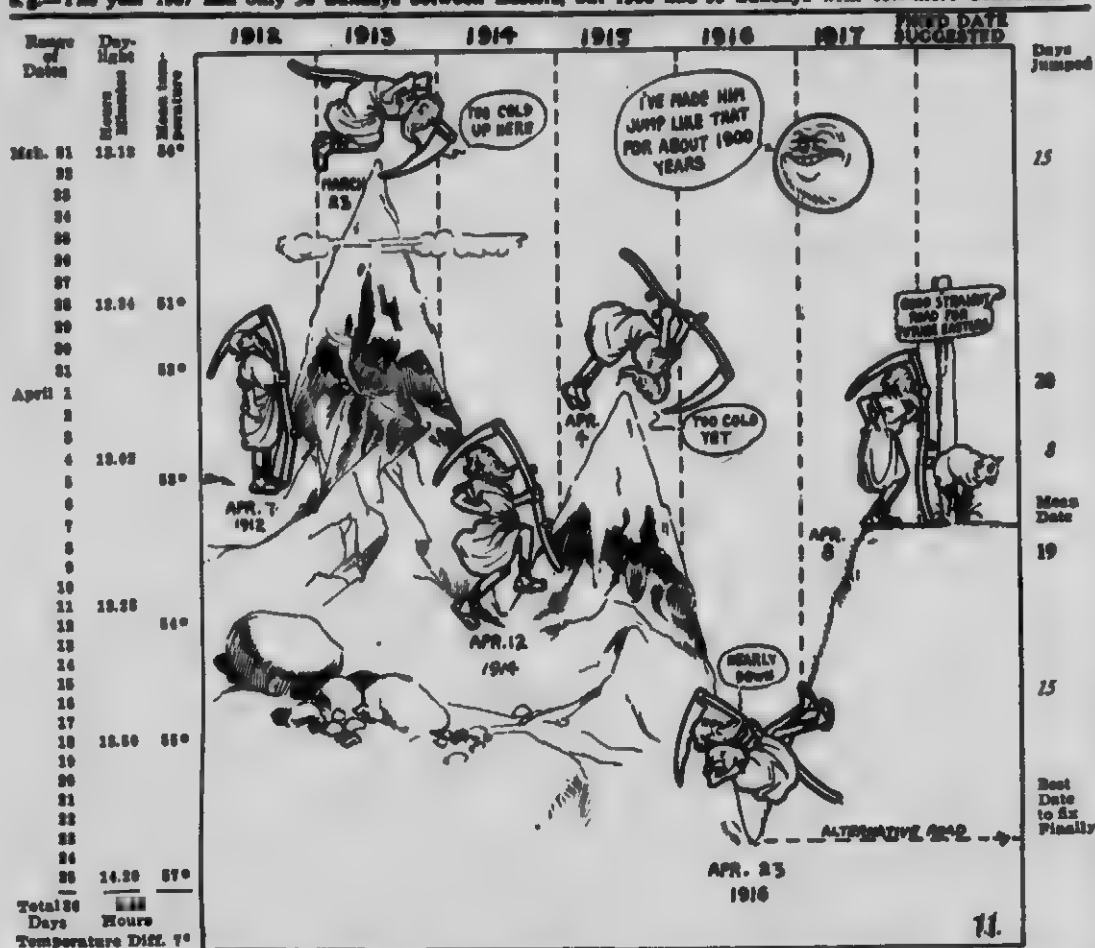


Plate 14.—How the Dates for EASTER are un-reasonably forced to CHANGE

The italic numbers down the right side record the number of days Easter jumps back in 1913, 1915 and 1917, and the bolder 20 and 19 days denote the leaps forward. The left side records of the average temperature at London (England) during the last thirty years prove a difference between early and late Easters of seven degrees, while the disparity in daylight is more than two hours per day during the 36 days of range between March 21st and April 25th, when the change of temperature is most risky for the ever-increasing number of children who then delight to put on their lighter and brighter dresses. That drifting is injurious to the vast number of families whose wage-earners necessarily plant potatoes, etc., during early Easter holidays, after which frosts too often impoverish their crops.

Surely we need a more reasonable and better way than the antiquated Lunar method which not only shifts Easters so needlessly backwards and forwards, but also drifts Whitsuntide and all the other *Movable Festivals* contingent upon it, so that the dates for legislatures, colleges, schools, law courts, etc., are drifted inconveniently, and those longest public holidays generally spoiled by cold and wet experienced during early Easters. They do not benefit anyone, but inconvenience us all and risk health.

The remedy suggested is for the governments to fix the date permanently through the International Conference which will decide whether the mean date of present fluctuations (April 8th) or April 23rd, or other date is the most advisable to ensure international agreement and concurrence of the churches throughout Christendom who now realize that moon-wandering Easter-days do not truly locate the Anniversary of the great event they are intended to celebrate, as a fixed date could better do.

EASTER and ALL FESTIVALS should be FIXED for the GENERAL CONVENIENCE of HUMANITY.

The following quotations taken from the Catholic Encyclopædia are instructive:

"There can be little doubt but that the early Christians felt as we do the inconvenience of the movable element of Easter, &c., in the otherwise stable framework of the Julian Calendar."

"But we have to remember that the movable element was established there by right of prior occupation."

"Since the Jewish Christians had never known any other computation of time than that based on the lunar month the only way which could have occurred to them of fixing the anniversary of Our Saviour's Resurrection was by referring it to the Jewish Pasch."

"Instead of determining that the 2nd day after the Jewish Pasch (17 Nison) should always be counted as the anniversary of the Resurrection, independently of the day of the week upon which it might fall, the Apostles appear to have settled (though in this we have very little positive evidence) that the Sunday was to be kept as the Christian Pasch which fell within the Azymer, or days of unleavened bread, whether it occurred at the beginning, middle or end of the term."

"This arrangement had the drawback that it made the Christian Feast dependent upon the computation of the Jewish Calendar."

THE MOON-WANDERINGS OF EASTER

Till Jerusalem was destroyed in 70 A.D. the insertion of the 13th (intercalary) month by the Jews, about each 3rd year, followed no fixed Astronomical rule, but the Sanhedrin decided each time whether the year should be embolismic or not—being influenced in their decision, not by Astronomical conditions alone, but by the forwardness or backwardness of the Seasons—to prevent their Paschal, 14th of the Lunar month Nisan, from arriving too early, as corn in the ear and lambs for sacrifice had then to be presented to the Priests.

It was the difficulty created by that changing system, and the impossibility of accommodating it to the Julian Chronology, as adopted throughout the greater part of the Roman Empire, which led to those troubles about the determination of Easter (the Paschal Controversy) that

nearly rent asunder the early Christian Church.

"However, though Tertullian declares without misgiving that Christ suffered upon the 25th March (a tradition perpetuated in numberless Calendars throughout the Middle Ages) this date was certainly wrong."

"Moreover, it was probably quite impossible at that period, owing to the arbitrary manner in which the Jewish Embolismic Years had been calculated, to calculate back to the true date. (See Easter Controversy.)"

Further, that standard authority, the Catholic Ency., III, 160, records: "When the destruction of Jerusalem in 70 A.D. practically deprived the Jews of the Dispersion of any norm or standard of uniformity, they probably fell into erroneous and divergent reckonings, and this in turn entailed a difference of opinion among Christians"—as to the true date for Easter.

"If it had been possible to ascertain in terms of the Julian Chronology the day of the month on which Christ actually suffered it would probably have been simplest for Christians all over the Roman world to celebrate their Easter (as later on they celebrated Christmas and St. Peter's Day) upon a fixed anniversary."

"Yet this, be it noticed, would have interfered with their newly established position of the 'Lord's Day' as the weekly memorial of the great Easter Sunday, as a fixed feast would of course have fallen upon all of the days of the week in turn."

That italic phrase, together with historic records concerning the origin of the "Easter Controversy" and other disputations which have too long retarded the usefulness of various sects, indicate that most of their bitterest controversies could have been avoided if any of their Calendar constructors had invented the "Skip-day" to establish fixed week-day names throughout the 365 days of every year, as now proposed to benefit everybody.

The "Skip-day" name suggested herein is for the last-day in each year, to be observed as a duplicate Saturday between the end of the 52nd week and Sunday beginning all New Years.



"Father Time suggests where we should **FIX** the "SKIP-DAY;" to follow the last week-day of December and thus close each Civil Year with Nature's Year on that "extra Saturday" to end 1916 Dec. 31, or 1918 Dec. 22, instead of Sunday "The Sabbath was made for man, not man for the Sabbath." Early Christians moved it, as we can, to fix permanent dates for Sundays and week-days, to benefit every human being, every day.

The simple adoption of the "Skip-day" duplicate Saturday Holiday is the key by which we can lock all names for days, weeks and months to recur on Almanacs and Calendars, as surely and easily as the seconds, minutes and hours are recorded on our clocks and watches, upon which they would be duly recorded, to save us from all Calendar-created worries.

Let us make the "Skip-day" the jolliest of public Holidays, to be celebrated by all nations as the year-end Festival, to encourage peace and good will—on the duplicate Saturday proposed to permanently close every year, and thereby provide the much needed day for "stocktaking" and family re-unions. That would blend and extend both the Christmas and New Year's Holidays with the week-end added most helpfully for both business and social convenience.

Either December 22nd, 25th, 31st or January 1st would do, but as Nature's Year ends on December 22nd, that date is best, especially as nations using the Gregorian Calendar would thereby be meeting more than half way two-thirds of the world's population who have been using Lunar Calendars, also the 150,000,000 Russians, Greeks, Slavs and other races still using the Julian Calendar, as fixed by Julius Caesar, now 13 days behind ours.

That suggested nine days' Reversion to the "Shortest Day" (indicated by the long arrow reaching from the 31st to 22nd of December) whilst not essential is very desirable. It would be final for all time and far easier than the 10 to 11 days' Reversion, made by Pope Gregory the Great's Reform in the years 1582 to 1752 respectively.

PLATE 19.—The above calendar illustrates several of the disadvantages of our present system. Many inconveniences arise from having 3 week-ends in months 1, 3 and 5 months apart. The dates are arranged as in 1911, beginning with the week. The thick black lines show the broken weeks at the ends of the months. It will be seen that the only unbroken line comes at the end of September, which was the one month in 1911 that ended with the week.

January 1st, 1911, was on a Sunday. In 1912 it was on Monday, and the other day names all through the months of January and February were pushed forward one day. 1912 being leap-year, the insertion of February 29th caused all later week-day names to move a second day. But if (as Mr. Colworth proposes) the 31st Dec., 1911, instead of being named Sunday, had been celebrated as an extra Saturday "Ship-day" holiday for stock-taking, etc., and "Leap-day" also thus used—all the week-day names would become permanently affixed to the other 364 dates as 52 weeks in all years—wide top-line and monthly dates above; but easier and better arranged when equally divided into 12 months of 4-weeks each, as condensed below for the whole year.

The easy, permanent "YEARAL" proposed to REPLACE our CHANGING CALENDARS

PLATE 16.—Mr. Cotsworth proposes that our easiest month of 4 complete weeks (Feb., 1914) be adopted to measure every month. Instead of *twelve* months *thirteen* are shown. The extra one is named "Sol." Of course the name that will be applied to this new month will finally be decided by the Powers in Conference, to suit that mid-summer month between June and July.

<p>THE PERFECT MONTH, FEBRUARY, 28 DAYS.</p>	<p>APRIL, JUNE, SEPT., NOV., 28+2=30 DAYS</p>	<p>JANUARY, MARCH, MAY, JULY, AUGUST, OCT., DECEMBER, 28+3=31 DAYS.</p>																																			
<p>FEBRUARY</p> <table border="1"> <tr><td>3</td><td>M</td><td>T</td><td>W</td><td>T</td><td>F</td><td>S</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td></tr> <tr><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td></tr> <tr><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td></tr> </table>	3	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	<p>NOTICE ALL EMPLOYEES MUST WAIT 282 DAYS FOR THEIR PAY</p>	<p>NOTICE ALL EMPLOYEES MUST WAIT 282 DAYS FOR THEIR PAY</p>
3	M	T	W	T	F	S																															
1	2	3	4	5	6	7																															
8	9	10	11	12	13	14																															
15	16	17	18	19	20	21																															
22	23	24	25	26	27	28																															
<p>SEEKING THEIR MONEY COMING REGULARLY.</p>	<p>SEEKING THEIR MONEY COMING REGULARLY.</p>	<p>SEEKING THEIR MONEY COMING REGULARLY.</p>																																			

OUR CLUMSY CALENDAR OF UNEQUAL MONTHS UNFAIRLY WITH HOLDS THE EARNINGS OF WORKERS
 and RETARDS CIRCULATION OF MONEY through STOREKEEPERS and MERCHANTS, FARMERS and OTHERS.

Origin of the Present Proposals to Reform the Calendar

10. The monthly dates fixed by the Caesars serve as a permanent register over which the week-day names *have to be reshuffled* every year by the calendar-makers, who provide the printed calendars ready in advance for our use. We merely use the dates accordingly. When the almanak-makers insert the 29th of February in leap years we accept it without questioning either why it should be allowed to inflict the injustice of forcing salaried servants to work that extra day without pay when it should be a public holiday, or why it and the 365th day should continue to drift our Christmas and national holidays into the middle of weeks, thus repeatedly, each year, depriving vast numbers of toilers throughout the world from deriving that extra happiness they could always enjoy if those holidays were permanently located on Mondays or Saturdays to link up with Sunday's restful extension.

11. The present turmoil of unequal months with changing day names was accepted by everybody with complete resignation as an inevitable consequence of the year's length being subdivided by the week of seven days, until the writer (then of York, England) in the year 1895, was impressed by the large amount of needless work and inconvenience caused by the change of day names for each monthly date and the fluctuations of dates for Easter, national holidays, fairs, markets, etc., when all should be permanently *fixed*.

12. He carefully considered the history and various factors blended in our calendars with those of other nations, knowing that every person in the civilized world is concerned in any proposal to simplify our time-worn calendars. Next an article was written demonstrating that by simply recording "Christmas Day" without either a week-day-name or a monthly-date, and similarly designating "leap day" by its name only, we could by locating them as *dies non* or general holidays, win the everlasting convenience and facilities of an *International Fixed Almanak* and rid ourselves forever from the numerous and constantly-recurring doubts and worries concerning dates, which often cause loss and trouble. Because our calendars annually shift the week-day names for dates, we thereby disorganize periods of monthly payments, vitiate comparisons of business on periodic records, break what should be the regular sequence of rotation duties, complicate business, accounts, etc.

13. The 365th day ending our year was first considered as the suggestive *Skip-day*, but the international advantage of locating that key to calendar reform nearest to December 22nd, when *Nature ends her year*, was found to be by far the most advisable, in view of the fact that the adoption of Nature's year-end would overcome all racial, religious and international prejudices, whilst a much more practical advantage can be gained for all humanity at the end of the year 1918 now that the new Chinese government have determined to abandon their ancient calendars (which moonwander like those that Julius Caesar abandoned) and establish a fixed one, because the latter has now become a business and national necessity to them.

Therefore, the Chinese Government are tentatively starting to use our Gregorian Calendar for Official documents, to prepare the way for the later change of the National Lunar Calendar-Books which have by far the largest circulation in the world.—They contain details for agriculture and gardening uses, as their sowing times vary yearly on their shifting moon Calendars.

14. Their drifting calendars vary like our Easters, which fluctuate five weeks, according to whether twelve or thirteen new moons occur in the Christian ecclesiastical year. Owing to these fluctuations there were only fifty Sunday collections in 1907, but fifty-five in 1908. No wonder that ecclesiastical authorities, both Roman Catholic and Protestant, are now favoring calendar reform, especially as the writer, when publishing his pioneer book, "The Rational Almanak," on its page 16, outlined an easier way to vary the monthly Psalms.

All nations are now feeling the urgent need for equalizing our months into complete periods of four weeks each to permanently harmonise each recurring monthly date with the fixed cycle of week-day names, by immovably calendaring fixed week-day names for each of the 364 days in the 52 weeks of every year, which should be rearranged into thirteen months of exactly four weeks each.

The *new model* of thirteenth month would be inserted between June and July without disturbing the seasonal indications of our present names for months as easily as the 29th of February was in 1912. February, 1914, being the easiest, is the model all nations will adopt, because the days of the week will always perfectly harmonise with the dates of every month, thus:

Clocks and Watches May Calendar Both Current Day-names and Dates

THE MOST CONVENIENT MONTH

	Weeks	I	II	III	IV
		<hr/>	<hr/>	<hr/>	<hr/>
Sundays	--	1	8	15	22
Mondays	---	2	9	16	23
Tuesdays	---	3	10	17	24
Wednesdays	---	4	11	18	25
Thursdays	---	5	12	19	26
Fridays	---	6	13	20	27
Saturdays	---	7	14	21	28

All nations now use the week of 7 days.

15. This change can be very easily accomplished during 1917, 1918 or 1919. It will be welcomed by the Chinese, Japanese, Hindus and other races of India and Africa who still use the moon-wandering (lunar) calendars, which the rapid progress made by the national development of their civilizations is impelling them more quickly to abandon, because their out-of-season-drifting calendars are now proving inadequate for the intensive agricultural and industrial development of twentieth century needs.

CHINA MAY LEAD

16. What the Chinese government decides concerning the fixity of equal months, exactly divisible by complete weeks registering fixed week-day names for the same monthly dates throughout the year, will most probably be adopted by the above-mentioned races, who together number 62 per cent. of the population of the world. The Greek calendar used by Russia, Roumania, Greece and others serves about 10 per cent., while our Gregorian calendar (which left out eleven days to correct errors in leap-year adjustments since Julius Caesar's reform) only serves about 28 per cent. of humanity.

In considering a permanent international fixed almanak we should bear those proportions carefully in mind.

Gregorian Calendar nations 28 per cent.
Julian Calendar (Russia, etc.) 10 per cent.
Asiatic and African Calendars 62 per cent.
using 13th month calendars every 3rd year.

17. How very easily the proposed thirteen months of four weeks each can be established is evidenced by the Chinese calendar for last year, when their extra (13th) moon was intercalated between June and July (exactly where, nearly twenty years ago, the writer proposed to locate it), by simply repeating their June a second time. As their New Year's festival spreads over two days, that will readily absorb the "skip-day" as their and our New Year's Eve.

18. If the Chinese government altered to the Gregorian calendar now, with all its defects, they would inflict needless confusion on their 400,000,000 countrymen, who in about four years would be again unsettled by altering to the International Fixed "Yearal," which most readily meets their permanent calendar needs and would be easily understood by all, because both the week-day names and monthly dates would be continuously cycling in unison as indicated on the outer edges of cheap dollar watches, as shown below. The Chinese calendar would then be easier every day, as on waking they would see at a glance, not only the time, but also the day of the week and month.

We, on the other hand, have to wonder every morning whether we can rest longer, if it is a Sunday, or whether we must get up for a work-day. After reflecting what day yesterday was, we deduce what today is, and then estimate, if we can, the day of the month, or find it on a calendar.

The "YEARAL" is applicable to CLOCKS and WATCHES, the "Day-pointer" moving like the hand of a center-seconds watch, 1-25th per day, indicated by Day-letters and Monthly-dates circled round either the front or back of watches which will then record complete time.

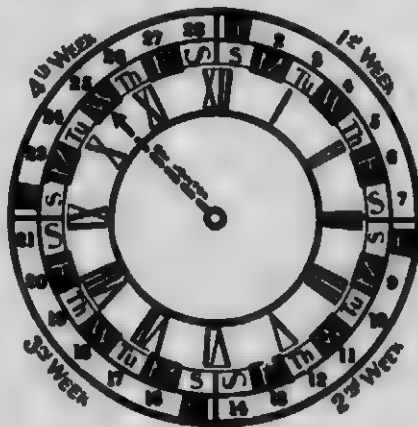


PLATE 12.—This is a further illustration of the great convenience that will be a feature of the reformed calendar as suggested by Mr. Cotworth. It represents an ordinary watch-face with a special hand added. (In order to make the diagram more clear the usual hour and minute hands have been omitted in the drawing.) The new hand is called the *day pointer*. On rising in the morning and looking at such a watch or clock the observer can tell at a glance what the time is, the day of the week, the date, and which week of the month it is.

The WEEK, its ORIGIN and SOME of its CHANGES

Although conclusive historic proof does not take us back further than the Egyptian planetary names for their 7 days of the week, the indirect evidences of the earliest records in Biblical and other Eastern writings indicate that as public assemblages had to be arranged at Full and New Moons, the use of Quarter-moons followed approximately as 7, 7, 8, 7, 7, 8, 7, 8 days, in which the 7 so far predominated that after star-gazing priests during many generations had watched the seasonal progress of the fixed 7 Stars of the Plough in the North Sky, they thereby established the fixed rotation of the 7 days week, as the Chinese and primeval races of India did.

The Egyptians knew of more planets than 7, and counted to 10.

The Jews moved the Sabbath from Saturday to Sunday, whence the Christians again moved the Sabbath to the Ancient Egyptian Monday.

ORIGIN of the WEEK—(Vide Cath. Ency. III, Page 158.) "Our week of 7 days is derived from the Egyptian system of observing the 7 most apparent planets—Saturn, Jupiter, Mars, the Sun, Venus, Mercury and the Moon—in the order of their periodic times (Saturn requiring the longest, and the Moon the shortest, time to complete their round of the Heavens). Beginning with the planets in order, the Egyptians named the days by the planet then passing during the 1st hour of each day" of 24 hours, 7 of which formed the final week Egyptian astronomer-priests had long before derived, thus:

"By 1st Hour 1st day named Saturn"	
"By 25th " 2nd " " Sunday"	
"By 49th " 3rd " " Moon-day"	
"By 73rd " 4th " " Mars"	
"By 97th " 5th " " Mercury"	
"By 121st " 6th " " Jupiter"	
"By 145th " 7th " " Venus"	

"Hence, apparently, Europeans derived their Latin names for the days of the week, which are still retained—except Samedi (for Saturn) and Dimanche (for Sunday)—in modern French and other Tongues," while Saturday, Sunday and Monday still are used by the Anglo-Saxon Races of British, German, American and other Nations.

"Those names were often used by the early Christians, as instances by Justin Martyr.

"The special honor early Christians paid to the Sunday (*dies solis*) coupled perhaps with the celebration of Christmas on the day designated the *natalis invicti* [Solis], may have helped later on, to produce the impression that the Christians had much in common with the worshippers of Mithras.

"Probably at first most of the Christians were Jews and as such they did not wholly withdraw from the Synagogue. The early Christian Sunday must have been rather a prolongation of, than a substitution for, the old-familiar Sabbath.

"But the observance of the 1st day of the week became distinctive of Christian Worship. St. John (Coloss. II, 16) considered converts not bound to observe Jewish Festivals, or the Sabbath proper. "That the early Christians kept with special honor the anniversary of the Resurrection itself is more a matter of inference than of positive knowledge.—"No writer before Justin Martyr seems to mention such a celebration.

According to Dio Cassius (Ency. Britt. IV, 665a), "The Egyptians commenced their weeks on Saturday. On their flight from Egypt the Jews, from hatred to their oppressors, made Saturday the last day of the week."

That pre-Jewish Egyptian origin seems further evidenced by the following excerpts from the Ency. Britt. XXII, p. 654: "The first writer who mentions the name of Sunday as applicable to the Lord's Day is Justin Martyr (about 140 A.D.). This designation of the 'first day of the week,' which is of heathen origin, had come into general use in the Roman world shortly before Justin through lack of knowledge appended these well-intended but misleading words, 'It is the first day in which God made the world.'

He was alluding to that framework of 7 days the writer of Genesis I used for his concise word picture of Creation, which could not be literal, nor then understood without such a setting within the inevitable 7 days all Races naturally derived as the fixed week because the nearest number of days in each Quarter of the Moon's 29.53 days cycle divided by 4, averages 7.38 days.

But as whole days only could be counted, and the 4 Quarters of the Moon were the only available signs the people at first had as guides to distinguish the days in each month, the week of 7 days was suggested independently through the Moon's phases to each Race of mankind, who at different periods developed separately beginning days for their festal cycles of 7 days.

Some early records indicate that as early

Our Sundays, neither observed on the Jewish Sabbath, nor true to the "1st day of the week" early Christians used.

men for mutual safety assembled and feasted each "new-moon" — when nights were darkest and even priestly leaders were uncertain upon which day that puzzling phenomenon might occur between nights — they developed the easy-going congenial plan of duplicating that initial rest-day of each month by a 2nd rest-day; making the New Moon Feast last 2 days, as we make Boxing Day, Dec. 26, the complement of Christmas Day, and the Chinese still spread their "New-Year's-Day" over 2 days, beginning with the New-Moon.

"In that case one exceptional week with a 7th working day" (naturally a duplicate Saturday) "would occur only once in 2 moons." Hence we see how naturally the 7 days became universal, while quite as naturally different Races began their Rest-days and weeks on different days of our weeks.

We need only refer to the fact that the Masses of Chinese still know the 15th day of each of their Lunar Months, by the fact of its being "Full-Moon,"—and then call to mind how earlier Lunar Calendar people derived their weeks from the "Quarters of the Moon," which cannot halve 15 days—to realize that in pre-historic-times the alleged 7th day of Creation has been often diverted from its 7th recurring day being truly observed as either the original Sabbath, or the Christian Sunday, now needlessly changing its dates through every following year.

Further, it seems evident that if the 7th Day Egyptian Priests had instituted the week at either an earlier or later date, Sunday would have been observed on a different day of our week.

I respectfully submit that the foregoing, with kindred facts, prove that our Week of 7 days was like the Calendar, derived from the Egyptians, and that it is most probable that Moses derived from the Egyptians his record in Genesis I of the great Periods of Evolution he so concisely described as the "7 days of Creation" by the Lord Jehovah, and the 7 days of the week with the 7th day Sabbath he, at Mount Sinai during the Exodus, so beneficially commanded the Israelites to keep holy as the Day of Rest then established by the 4th Commandment.

The words—"6 days shalt thou labor and do all thy work, but the 7th day is the Sabbath of the Lord thy God: in it thou shalt not do any work. thou. nor

"thy son, nor thy daughter, nor thy man-servant, nor thy maidservant, nor thy cattle, nor thy stranger that is within thy gates"—all cumulatively prove that the great essential was to ensure that all workers should have a day of complete rest after working 6, as nearly all civilized nations still find necessary to enforce by law to recuperate and maintain the vitality of their people.

Therefore if, as herein suggested, the Nations unitedly proclaim that the proposed "Skip-day" shall be Internationally observed as an "Extra Day of Rest," that should not leave any cause for quibbling about any alleged breach of that 4th Commandment—provided that the next day be calendared as Sunday.

Apart from the arguments of the Jews, Adventists and others who maintain that our Sunday is not held on the true Sabbath, we have the following irrefutable records from the most reliable "*Catholic Encyclopedia*," based on the oldest Christian records and published by authority of His Holiness the Pope and the Vatican, who have the authenticating records:

Vol. XIV, p. 336, "Sunday (Day of the Sun) is derived from Egyptian astrology." "During the 1st and 2nd Centuries the week of 7 days was introduced into Rome from Egypt."

"Our Sunday is not the same as the early Christians observed—as with the Jewish Sabbath, the observance of the early Christian Sunday began with sun-down on Saturday and lasted till sundown on Sunday. That method of reckoning Sunday, from Sunset to Sunset, continued in some places down to the 17th Century but in general since the Middle Ages the reckoning from Mid-night to Mid-night has been followed."

These prove that even after early Christians moved their Sabbath rest from the 7th to the 1st day of the week the Roman Catholic Church, when completely representing all Christians during the 16th Century, moved the commencement of our Sunday from its old beginning at sun-down to mid-night on Saturdays, so that even the early Christian Sabbath has certainly been moved and is not now truly kept even in Rome, and is now further varied in different parts of the World, by many hours, currently over-lapping Westwards on parts of Saturdays, and Eastwards on parts of Mondays.

The Earliest Sabbath Cannot be Located, but Humanity Can Benefit by Fixing International Sundays.

"The obligation to rest from work on Sunday remained indefinite for several centuries—even after the Edict of Constantine the Great in 321 A.D. forbade Judges and townspeople to work on Sunday—he made exception in favor of agriculture."

We should bear in mind the facts that the Christian Era was not introduced even in Rome until about the year 527 A.D. by Dionysius Exiguus, and our Sundays not definitely fixed until Alcuin's time near the end of the 8th Century.

There is not any need for the Nations to be inconvenienced by the suggestion made by the reverend advocate in the United States who has suggested the impracticable limitation of ordinary years to 364 days, in order that the 365th day may be accumulated with Leap-day to intercalate a full week, in years varying from 5 to 6 years apart,—to more dogmatically enforce obedience to that 4th Commandment, the spirit of which would not be contravened, but helped by the adoption of the "Skip-day" as the International yearly "Rest-day" in Mid-winter, and the use of "Leap-day" as a Mid-summer Holiday in all Nations each "Leap (4th) year."

It is not possible for any group of persons to prove that they observe Sundays on the 7th recurring day after the cosmic Creation, as some suppose. Accumulating evidences from ancient records recently discovered indicate that the 7 days recorded in the 1st chapter of our Bible were added long after the original Book of Genesis was written, beginning with what is now part of Chapter II.

But, vide 9th Ency. Britt. XXI, 125: "It appears certain that the decalogue (10 Commandments) as it lay before the Deuteronomist did not contain any allusion to the Creation, and it is generally believed that this reference (to the 6 Days of Creation) was added by the same post-exile hand that wrote Genesis I. The older account of Creation in Genesis II does not mention the 6 days."

Saint Chrysostom, the eminent scholar, writing during that great formative period in which the Christian Church attained its greatest vigor, near the close of the 4th Century (in his "10th Homily on Genesis") "discerns the fundamental principle" of Rest, required by the 4th Commandment, "to be that we should dedicate one whole day in the circle of the week and set it

apart for exercise in spiritual things." Vide Ency. Britt. XXII, p. 654.

There also is quoted from the *Apostolic Constitutions* (VIII, 33): "Let the slaves work five days; but on the Sabbath Day (Saturday) and the Lord's Day (Sunday) let them have leisure."

Yet we after nearly 1,500 more years of Christian civilization have not risen to that ideal, which would so happily remove the great blight of unemployment from our 20th Century harried and tension-driven people—who after the greater folly of European nations fighting each other to the limits of exhaustion, may more readily welcome the Saturday's Rest as well as that of Sunday, and begin a New Era.

All these link up with the historical and earlier natural evidences, together demonstrating that the naturally required rest of 1 day in 7 was evolved by human necessities and has been equally profitable in ennobling mankind on whichever day of the week it has been kept by any nation.

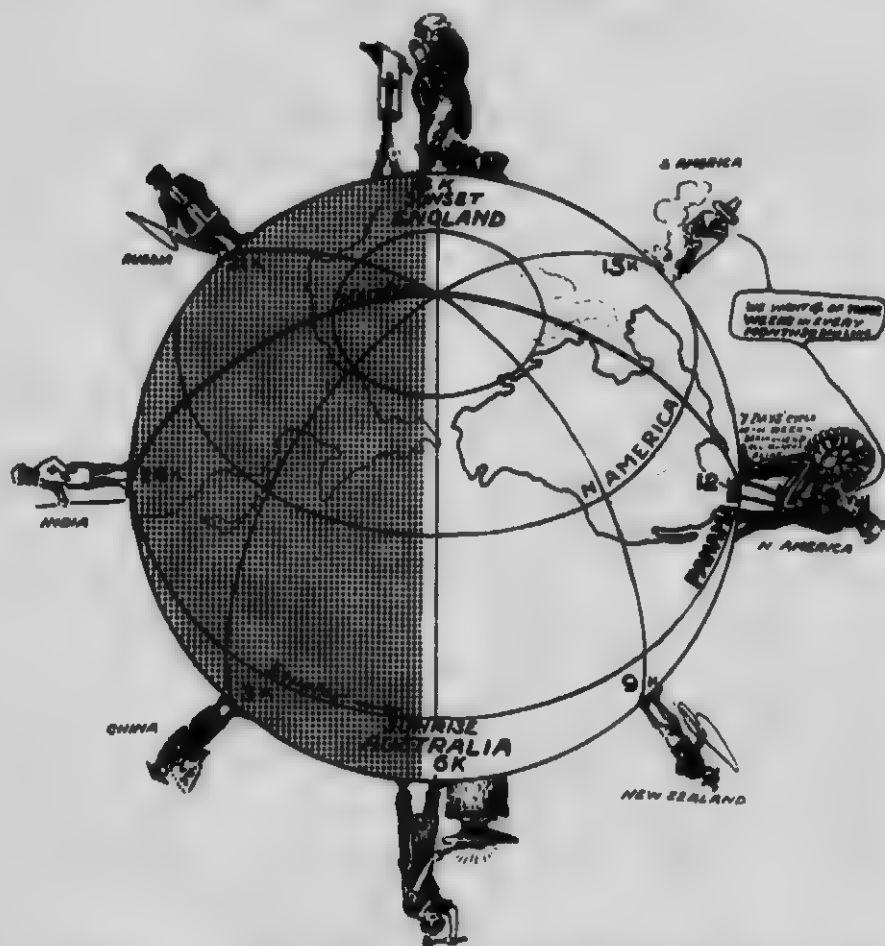
The foregoing, with earlier evidences concerning the long series of patchy Calendars early races had to use before priests and early astronomers ascertained and made known the true length of the year, prove how impossible it is for any person to locate the original Sabbath or find how often it has been changed. *But we can all benefit by fixing Sundays to permanent dates in future years.*

The hyper-critical few persons who quibble at moving the rightly movable Christian Sunday, overlook the historic fact that early Christians established that precedent of world-wide benefit derived by changing the Sabbath.

Yet those few condone, without protest, the greatest Nations of the World, now ruthlessly slaughtering each other most on Sundays, when they should at least mutually refrain from killing their fellowmen wholesale on that then most needed "Day of Rest."

Such a little minority cannot reasonably expect to persuade the vast majority of broader-minded, progressive people in their own and other nations to believe that they should longer ignore the far more important present-day-need for one uniform International Rest Day, as a non-sectarian, natural, star-indicated Sunday, to replace the confusing and conflicting Mahomedan Sabbaths on our Fridays, Jewish Sabbaths on Saturdays and the later changed Christian Sabbaths on Sundays.

Our SUNDAYS ~~currently~~ VARY in SATURDAYS and MONDAYS in DIFFERENT PARTS of the WORLD



SUNDAYS with ALL WORK-DAYS concurrently DIFFER in DAILY TIME between different parts of the world—while "John Bull" as the father in England may be at church praying, his son if migrated to Australia may be working. Again, while the natives of India are asleep at midnight, the strenuous citizens of the United States are wide awake at noon, advocating the adoption of 4 weeks as the standard length for all months, which would be exactly quartered by the week, as the earliest Calendars constructed by Central Americans did far more conveniently than the Unequal Months imposed by Roman Caesars upon Europeans ever can.

While the keen cattle-ralers and the herdsmen in Argentina are preparing to round up their cattle, the peaceful Chinese are enjoying their well-earned sleep.

Consequently when part of them migrate—as they are continuously doing in ever-increasing numbers—they cannot take their homeland Sunday times with them, but quite naturally accept the changed Sunday hours they find in use—say in the hour-zones of the United States and Canada—without the slightest tinge of detriment or sentimental qualm affecting anyone.

It will be much easier to practically and reverently observe Sundays after they become permanently FIXED by the insertion of the closing day of the year as "Rest Day" or "Skip-day," which will very helpfully tend to harmonise all Creeds and Nations.

The last change of Sunday—as evidenced at the end of page 67—skewed Sunday around about 6 hours earlier during March and September, but only 4 hours earlier during June, although on the Shortest Day, Dec. 22nd, the change to Mid-night made Sunday begin about 8 hours earlier.

World-wide Need for Non-Sectarian International Sundays

In reality their phantom source of quibble concerning which of the 7 days was the original Sabbath, harks back to the untraceable myths, Moon and Star-time-dividing-methods used in prehistoric times, and the disputed removal of the Hebrew Sabbath as Hitzig indicates anent the Feast of Pentecost.

Those appear to be very trivial when compared with the present-day-need for the greater convenience and mutual welfare the non-sectarian "Yearal"-fixed Sabbaths would through unity confer mutually upon all.

We should bear in mind that the 300 millions of Mahomedans, with the greater numbers in China, have as much moral right as we to desire the Sabbath to be fixed on their "Day of Rest," and that as the proposed "Skip-Day" would adjust the proposed mutually FIXED non-sectarian 52 Sundays fairly round in yearly turn during successive years, to each of their old Sunday's recurring 7th days; there are good reasons for feeling confident that all Nations and Creeds will be even more glad to adopt the proposed universally FIXED SUNDAY, than the millions of their emigrants now resident in America have been pleased to enjoy the benefits of United-rest on the uniform American Sabbath, to which they unitedly conform.

But obviously more beneficial results will follow the united observance of the same day's rest, especially where different Calendars are used by nations adjoining each other in Europe, Asia and Africa—in some of which countries 2 or more Calendars are in use, e.g., 4 in Egypt, Syria, Turkey, but more in India. See page 91.

Now that this most simple calendar is practically available, the Chinese government will not long continue our confusingly varying months which will expose their government to criticism for causing avoidable confusion by patchwork, needing another change in 1919.

Our months oddly vary in their length, February usually having twenty-eight days, but in leap year twenty-nine; our fourth, sixth, ninth and eleventh months have thirty days each, whilst scattered in between them, without "odd" or "even" order, are the other seven months with thirty-one days each. That jumble is increased by the unstable factor of ever-varying split portions of weeks, beginning and ending our months as demonstrated on page 62; and the shifting factor that throughout every one of our twelve unequal months the week-day names are confusingly moved forward one day in ordinary and two days in leap years. The result is that

we cannot truly realise what a month is, though we work and pay by the month, and every month's output of labor differs from that of the month before or after it and from the corresponding month last year.

That is neither good enough nor sufficiently practical for Oriental nations, who know that 28 per cent. of the world's population using Gregorian calendars and the 10 per cent. using the Julian (Greek) calendars are being *compelled* by national and business requirements to improve them into one International Fixed Almanak.

That name is too long for practical use. The phrase "International Fixed Calendar" is longer. The words calendar and almanak are generally confused, but should be distinguished, because the calendar records our list of day-names *varying throughout every year*, whereas the almanak is the *permanent register of fixed positions* for the same numbered days in every year, as shown by the plate displaying the four quarters of the British Clog Almanak.

I submit that it would be better to discard both the words calendar and almanak as names for our list of days each year, and more concisely use the name "Yearal" to express the idea of the year and denote the proposed fixed register for *all* the days in *all* future years, just as our American cousins replaced the two words "post card" by the simpler "postal." That may be more acceptable to other nations now using the general term "year," especially the 62 per cent. of humanity who (*vide par. 16*) do not use Christian calendars and therefore are less inclined to accept Christmas Day, 1916, as the date for initiating the "Dies-non" method to secure a *fixed* calendar.

New Year's Day, December 31st, Christmas Day, or the "Shortest Day" (Dec. 22) would do for the "Skip-day," but the best results would be gained by selecting December 22nd as the right day to end all years with nature's year.

It may be tactful and helpful to cordiality amongst all nations, if Europeans would, as per paragraph 13, *gracefully accept Nature's year's end on December 22, 1918*, as the "skip-day" date to end the use of our clumsy day-changing calendars by observing that day internationally as "Skip-day" in non-Christian nations and as Christmas Day among the 38 per cent. of humanity using Christian calendars. The next day, Sunday, would then be New Year's Day, 1919. What would otherwise be the 23rd to 31st December would then be readjusted as the first nine days in January, as Pope Gregory the Great similarly readjusted ten days by his reform in

Proposed Location of the "Skip-day" at the Year's-closing Day.

the year 1582. Then in all following years the permanent sequence in the proposed style of 28-day months would be 4 fixed weeks in each of 13 months ending Saturday, December 28th, with the Skip-day following as a duplicate Saturday on Nature's "shortest day," as the last day of the "year-al" or permanent year almanak. The Skip-day and New Year's Day should be prescribed as International Public Holidays by Calendar Reform Legislation.

Such a transfer of the last nine days of December to form the first nine days of January would cause persons whose birthdays recurred, or contracts expired, during those days, to keep their ages, etc., true by adopting their corresponding new dates from the Permanent Comparative Calendar the International Conference would in that case arrange to circulate 9 days in advance of those tabled and exemplified on the circular Calendars herein, and on page 76.

The six days now intervening between Christmas and New Year would by that method be diverted and Christmas thus linked direct to New Year's Day. Some persons think that the increased convenience resulting from that arrangement might tend to curtail the combined holidays, but the extra day usually granted for Boxing Day or New Year's celebrations would surely be continued on the Monday, so then the permanent holidays would always be together as Saturday afternoon, Skip-day, (as Christmas Day on December 29th corresponding to our December 22nd), New Year's Day and Celebration Day.

Several practical advantages would result from that course, especially as Saturday has so rapidly grown in popularity during recent years, *e.g.*, the majority of all nations, womenkind, could better prepare for these greatest yearly feasts and festivities when Saturdays rather than Sundays thus precede.

The Celebration Day following New Year would be highly appreciated by the Chinese, Japanese and other Oriental nations, whose most joyous New Year's holidays would, like those of Europeans, thus be expanded by being linked up with the happiest week-end closing every year.

That would be better than the present cleavages of both Christmas and New Year's weeks now recurring during three consecutive years, alternating with three later linked with week-ends which when Christmas and New Year's Days come on Sunday cause more loss of holidays.

But the greatest advantage would arise through the Calendar being thus perfected in fixed form for all mankind for all time.

Christmas Day as a duplicate Saturday would give greater freedom for joyous use, and the preceding Saturday as Christmas Eve would help to extend the holidays.

Similarly Christmas Day when celebrated by our Scotch friends as New Year's Eve would be helped by New Year's Day being observed as the Sabbath, though they may reasonably prefer to begin with New Year's Day as a non-Sunday "Skip-day." But all should with greater reason conform to what the best wisdom of the majority at the International Conference decides, even if that decision is not unanimous, as we hope it will be. True reformers are not laying any rigid plan before them, but prefer to fairly consider all and maturely select the best.

But before even a Preliminary Conference of advocates can wisely decide upon the best recommendations to make, it is absolutely necessary that the leading advocates should all receive ample notice to formulate the best suggestions or amendments from every nation. For example, it might be advisable to facilitate astronomical calculations by hopping back 10 days from Jan. 1st to Dec. 22nd to begin New Year then.—The writer, after 19 years' frank study of this great problem concerning the needs of not only Europeans and Americans, but also of the teeming millions in Asia and Africa who desire our consideration, respectfully submits that the proposed Reform would best be initiated by locating Sunday, the "Shortest-day" of the year 1918, on Dec. 22nd, as the "Skip-day" or "Year-day," to free us from all the numerous and incessant Calendar inconveniences which now daily impede all day-fixing arrangements.

If the final Conference considers it inadvisable to revert to Nature's year-end on Dec. 22nd, then the simplest plan, I submit, would be to adopt the original proposal to establish the week-day order of the fifty-two weeks of the year 1916, divided in thirteen months of four weeks each, except that Sunday, December 31st, could better be permanently replaced by Skip-day as a duplicate Saturday and public holiday. That 365th day of the year would ~~be a duplicate~~ recur between the 52nd Saturday of every following year and the first Sunday beginning all new years. Thus the present anomaly of a 53rd week-day ending each ordinary year, and two 53rds in leap-years, would be abolished. Sunday would in that way begin all new years, months and weeks concurrently.

Each nation would then use Skip-day to celebrate both its national year-end festival and by mutual international greetings promote peace and goodwill.

LIST OF PERSONS INVITED TO PARTICIPATE IN THE PRELIMINARY CONFERENCE, TO FURTHER THE REFORM OF THE CALENDAR, AT LIEGE (BELGIUM) ON THE 27th, 28th AND 29th MAY, 1914

The invitations were sent out on the 6th May, 1914, by the Bourse Industrielle de Liege, at the request of M. Canon-Legrand, President of the International Chambers of Commerce, holding their biennial meeting during June, 1914, in Paris, after those International Chambers of the whole world had voted, at both their 1910 and 1912 meetings, unanimously in favor of Calendar Reform.

The prominence of the Belgian advocates of this worthy cause, is highly creditable to that gallant little Nation's discernment.

Louis Canon-Legrand, President du Comité Permanent des Congrès, Mons, Belgium
Charles Christophe, Secrétaire de la Fédération des Chambres de Commerce de Belgique, Ghent - Belgium

Emile Jottrand, Secrétaire Permanent Congrès Internationaux, Mons, Belgium
G. Lecoq, Directeur de l'Observatoire de Belgique, Brussels - Belgium

Th. Zech Lévy, Editeur Braine le Comte - Belgium
Président de l'Association Commerciale et Industrielle du Luxembourg, Arlon - Belgium

Pasteur A. Rey, rue Hors Chateau 19, Liege - Belgium
John Soubre, Secrétaire Chambre de Commerce, Verviers - Belgium

G. N. de Stoppelaar, 48 Chaussée de Charleroi, Bruxelles - Belgium

Gustave Armelin, c/o M. Camille Flammarion, Rue Cassini 16, Paris - France

M. Bigourdan, Membre de l'Institut de France, Paris - France

Paul Delaporte, Ingenieur, 5 Rue Ballu, Paris - France

H. Deslandres, Directeur de l'Observatoire de Meudon - France

Camille Flammarion, Astronome, Rue Cassini 16, Paris - France

Emile Hanin, c/o M. Camille Flammarion, Rue Cassini 16, Paris - France

M. Hetier, Revue Scientifique, Rue de Chateaudun 41 bis, Paris - France

M. Lallemand, Membre de l'Institut de France, Paris - France

Dr. Cesar Amaler, Herzog Wilhelmstrasse 7, Munich - Germany

W. E. Buesching, Geometre, Halle sur Saale - Germany

Hr. Foerster, Directeur hon. de l'Observatoire de Berlin, Westend 32, Charlottenburg, Berlin - Germany

Robert Heinicke, Roda, Saxe Altenberg - Germany

Arnold Kampe, Hambourg - Germany

W. Koeppen, Observatoire de Hambourg - Germany

Emile Rosenkrans, Pasteur, Wald - Germany

Moses B. Cotsworth, York - England

(Now of 231—7th St., Westminster, B. C., Canada.)

A. Pearce, Member of Parliament, London - England

Cecil Reddie, Abbotsholme, Rocester, Derbyshire - England

Frederic Black, Inverness - Scotland

Alexander Philip, Brechin - Scotland

John C. Robertson, Kirkcaldy - Scotland

Georges Stringo, Secrétaire Chambre de Commerce, du Piree - Greece

G. S. de Clercq, Secrétaire, General Maatschappij, Haarlem - Holland

Ad. Bertrand, Astronome, Santo Domingo, Burgos - Spain

Alfred Georg, Chambre de Commerce, Boulevard du Theatre, Geneva, Switzerland

L. A. Grosclaude, Professeur, Boulevard du Theatre 2, Geneva - Switzerland

Fritz Reininghaus, Zurich - Switzerland

Von Hesse Wartegg, Consul-General, Lucerne - Switzerland

H. T. Henry, Overbrook Seminary, Philadelphia, Pa., United States of North America

Carlos Hesse, Astronome, Iquique, Chili - South America

ANALYSIS OF PART INTERNATIONAL REPRESENTATION AT THE LIEGE PRELIMINARY CONFERENCE IN MAY, 1914

NATIONS INVITED:	Population in millions	Representa- tives	Percentage of the Repre- sentatives invited.	International Percentage due according to the 1,750 millions population estimated for the world.
Belgium	7	9	23.0	.4
France	40	8	20.5	2.3
Germany	65	7	17.9	3.7
Great Britain	43	6	15.4	2.5
Greece	3	1	2.6	.3
Holland	6	1	2.6	.3
Spain	20	1	2.6	1.1
Switzerland	4	4	10.2	.3
Total Possible Attenders..	188	37	94.8	10.7
INVITED TOO LATE:				
South America	90	1	2.6	2.9
North America	131	1	2.6	7.7
Total invited	378	39	100%	21.3
NATIONS NOT INVITED:				
Austria	50	nil	nil	2.9
Italy	35	nil	nil	2.0
Russia	135	nil	nil	7.7
Other nations of Europe.....	40	nil	nil	2.3
Other nations of Oceania	7	nil	nil	.4
Other nations of Africa.....	140	nil	nil	8.0
Other nations of Asia.....	970	nil	nil	55.4
				100.0
Total not invited.....	1,377	nil	nil	78.7
Not invited in time	185	2	5.4	10.6

Minimum total unrepresented. 1,562 millions, who constitute at least 89.3 per cent. of the total estimated population of 1,750 millions needing world-wide consideration. Of these there may possibly be about 150 millions in Africa, etc., without Calendar.

The first cross-line Total of Possible Attenders ends by showing that only 10.7% of the world's population were invited, nearly all from the Northwest Quarter of Europe, and as the ~~rest~~ and others did not receive their invitations in time, it is evident that less than 10% of the people concerned were represented—leaving more than 90% of humanity ~~unrepresented~~, to later decide whether they will ~~con-~~form to the recommendations of that too hurriedly summoned conference at Liege.

The International Almanac Reform League much regret that sufficient notice was not given to permit any representatives from North or South America, Asia, Africa, or Australasia to attend, with the useful practical data and evidence they would otherwise have been able to bring to further this most needed world-wide reform.

That regret is more widespread because such eminent advocates of the earliest Calendar arrangement in 13 months of 4 weeks as Mr. Sanford Fleming, of Ottawa, Canada, and Don Carlos Hesse, of Iquique (Chili) for South America, have been excluded, although it will be later found that most of the 90% of the world's representatives thus excluded will prefer to use the 13 months "Yearal" as outlined

Unfortunately the inadequate notice for the

Liege meeting led some of the latter to fear that a misleading or premature vote in favor of 13 months might be obtained at Liege before the vast 90% majority of humanity have opportunity to record their preference for the 13 months of 4 weeks each.

It is sincerely hoped that the European representatives at Liege will frame their recommendations with due regard to the needs of the nine-fold more numerous populations who will arrange to have more adequate and timely representation at the final Official Conference of International Representatives, who will ultimately decide the best form of permanent Calendar for universal use.

The International Almanac Reform League have always striven to ensure that the proposed Calendar Reform be made complete and final in the form that will be best for all humanity, including the highest civilizations of Europe.

The International League, while always giving opportunity for the advocates of all phases of Calendar Reform to expound their views, desire to impress upon all readers the supreme importance of advocating only the best of the methods which the most experienced Calendar Reformers are able to submit for the final consideration of the forthcoming Official International Conference.

Some Reasons Why We Should Adopt the More Convenient "YEARAL"

1. **EVERY-MORNING**, directly we wake, the imperfections of our changing Calendars force our minds to recall some incident in yesterday's experience to remember what day it was, and thereby deduce what morning it is, wishing it may be Sunday for longer rest. A normal life of 30 years is burdened by 28,320 of these calendar worries which are only part of the penalty we waste in mental energy, because our ancestral Almanac-makers failed to discover this "Skip-day" remedy to perfect our System of Time-recorders (indicated by Front-plate A) to show us the day's name as we look at our watches to see whether it is "time to rise."

2. **EVERY-DAY** we likewise repeatedly have to hunt for the Calendar's drifting week-day-names for monthly dates, when dating letters, choosing days for work or appointments, etc. A glance at the "Day-pointer's" position on the clock can save these perplexing efforts after this Reform is carried into effect, about 1918. *Thence-forward we will always know by the date, the week-days upon which dated events occurred.*

3. **EVERY-NIGHT** Calendar defects cause trouble when selecting days and dates for social gatherings, meetings of Societies, Unions, Clubs, Companies and other assemblies, through the changing of week-day names necessitating such descriptions as "the first Tuesday after the first Monday," "the first and third Wednesday"—instead of the clearly defined permanent dates the "Yearal" would indicate as the 3rd, 4th and 18th day respectively in every month every year.

4. **EVERY-LADY** locating her "At-home" days is forced to write or print such repetitions as "first Wednesday," causing her visitors to search their Calendars to see "on what date it falls this month." With the "Yearal" in use, a dainty 4 on the card would always suffice for all using that day—as for the "second Thursday" and so on—saving trouble for all concerned. *The vital 280-days-period of child-bearing would mature 20 months from the date nature indicates.*

5. **EVERY-HOUSEWIFE** and **HOUSE-KEEPER** maintaining a family or Boarders, suffers inconvenience and sometimes distress when 5 market days or Saturdays occur in one month (as they do 4 times each year), causing either reluctant requests for "more money," borrowing, or gradual drifting into Arrears and Debt. We should not allow the vagaries of our Calendars to impose these indignities on our home-brighteners. *We need equal months of 4 weeks to equalize times of Earning and Spending—to ease and brighten the lives of workers.*

6. **EVERY-PERSON** drawing Monthly Pay is then placed at similar disadvantage because our months vary from 28 to 31 days long. The danger confronting under-paid Girls who have to pay for Room and Board when the 5th Saturdays recur, adds to those causes of temptation and Debt, which more extensively and injuriously affect untold myriads of poor families who unconsciously drift into arrears with their grocery and other traders' accounts, through months being unequal, and broken irregularly by weeks.

7. **EVERY-BUSINESS-MAN** suffers ultimately from those Calendar-created "Bad Debts" accumulating, and the temptation of Retailers and others to spend too freely after the 5th Saturday in a month has temporarily inflated "Cash-on-hand." Some Bankruptcies and much Loss result. The fractions of weeks split between months, where weekly and bi-weekly wages are paid, impose impediments retarding the ascertainment of Costs of Production and Monthly

Balances. They really add to the cost of living.

Business-people who pay wages every 2 weeks are inconvenienced when 3 pay-days occur in one month, as in January, 1914, when those who paid on Thursdays, Fridays or Saturdays had to pay 6 weeks' wages (for 42 days) out of 31 days' income, straining credit at their Banks.

8. **EVERY BUSINESS**, however large, is injured by our Calendar's unequal months drifting 24 to 27 work-days into different months, as later described under par. 22, where the Tables printed and referred to prove that the Calendar-caused fluctuations of Earnings on British Railways exceed \$2,550,000, thus intensifying gambling on Stock Exchanges for such extra profits.

9. **EVERY NATION** experiences the above disadvantages and more, causing incessant, but avoidable references to Calendars; altering dates for assembling Legislatures, Law Courts, Colleges, Schools, etc.; necessitating needless Proclamations moving Public Holidays, Fairs, Market-days, etc., and retarding that greater circulation of money throughout the community, which will come to benefit all, when months of 4 weeks bring regular periods for every purpose.

ALL THE ABOVE INDICATED TROUBLE IS CAUSED BY THOSE TWIN-DEFECTS DEMONSTRATED on pages 24 and 64—THE UNEQUAL MONTHS PROJECTING BEYOND FOUR WEEKS, AND THE 31st DECEMBER PROJECTING BEYOND THE 32 WEEKS EACH YEAR, THUS ALTERING ALL FOLLOWING "DAY-NAMES," TILL IT IS SEPARATED AS "SKIP-DAY."

The established Churches and people generally are also inconvenienced by Easterns jumping as depicted on page 59 and detailed below:

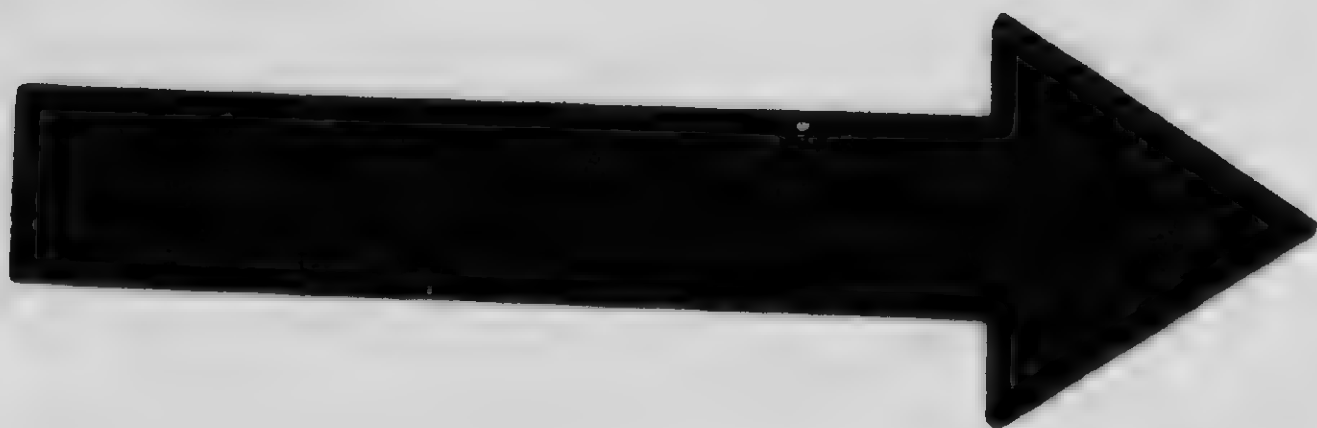
Table "A".

RANGE of CHANGEABLE DATES affecting **WHITSUNTIDE** and other **MOVABLE FESTIVALS**

Results of the present changeable system, taking for example Easter and Whitsuntide 7 weeks later) as typical of the others:—

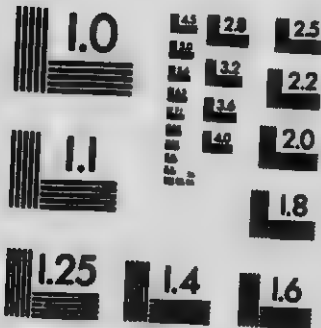
Range of Date Change.	Year	Easter Day	Whitsuntide	Time between successive yearly Festivals
Mar 27				
28	1900	April 15	June 3	8 wk
29	1901	" 7	" 20	8 wk
30	1902	Mar. 30	" 13	12 wk
31	1903	April 12	" 31	8 wk
1	1904	" 3	" 22	8 wk
2	1905	" 25	June 11	8 wk
3	1906	" 15	" 3	15 wk
4	1907	Mar. 31	May 19	19 wk
5	1908	April 19	June 7	8 wk
6	1909	" 11	May 30	15 wk
7	1910	Mar. 27	" 15	15 wk
8	1911	April 16	June 4	20 wk
9	1912	" 7	May 26	9 wk
10	1913	Mar. 23	" 11	20 wk
11	1914	April 18	" 31	20 wk
12	1915	" 4	" 23	19 wk
13	1916	" 25	June 11	15 wk
14	1917	" 8	May 27	8 wk
15	1918	Mar. 31	" 19	8 wk
16	1919	April 20	June 8	20 wk
17	1920	" 4	May 23	16 wk
18	1921	Mar. 27	" 13	20 wk
19	1922	April 16	June 4	15 wk
20	1923	" 7	May 26	19 wk
21	1924	" 29	June 18	8 wk
22	1925	" 19	May 31	8 wk
23	1926	" 4	" 23	15 wk
24	1927	" 27	June 15	15 wk
25	1928	" 6	May 27	15 wk
26	1929	Mar. 31	" 19	20 wk
27	1930	April 20	June 8	20 wk

Why should these Festivals leap forward 19 or 20 days (3 weeks) on the Calendar about every third Year, and flounder along this 35 days' range through the full Moon's wanderings after the fixed Equinox? There is no sound reason for this absurdity which makes all these recurring Festivals untimely and unreal.



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
(716) 482-0300 - Telex
(716) 288-5000 - Fax

Table "B"

COMBINED CALENDAR FOR TRANSPERING THE DATES BETWEEN THE PRESENT AND PROPOSED ALMANACS AFTER INAGURATED

It is suggested to our American friends that they could gain more from their National Holidays, if they were thus permanently combined with the week-end for public occasions, by merely moving "Independence Day" one day forward, and "Thanksgiving Day" one day later, just as they now do temporarily when these Holidays fall on Sunday.

It will be noticed that the "combined" calendar is the year by gradual change of the present "unequal" calendar, increasing to 14 days of July 1, then to 15 days of Christmas, and so on, until the "combined" calendar is reached. The "combined" calendar is the year by gradual change of the present "unequal" calendar, increasing to 14 days of July 1, then to 15 days of Christmas, and so on, until the "combined" calendar is reached. The "combined" calendar is the year by gradual change of the present "unequal" calendar, increasing to 14 days of July 1, then to 15 days of Christmas, and so on, until the "combined" calendar is reached.

Month	Day	Present	Proposed	Combined
Jan.	1	Mon	Mon	Mon
Jan.	2	Tue	Tue	Tue
Jan.	3	Wed	Wed	Wed
Jan.	4	Thu	Thu	Thu
Jan.	5	Fri	Fri	Fri
Jan.	6	Sat	Sat	Sat
Jan.	7	Sun	Sun	Sun
Jan.	8	Mon	Mon	Mon
Jan.	9	Tue	Tue	Tue
Jan.	10	Wed	Wed	Wed
Jan.	11	Thu	Thu	Thu
Jan.	12	Fri	Fri	Fri
Jan.	13	Sat	Sat	Sat
Jan.	14	Sun	Sun	Sun
Jan.	15	Mon	Mon	Mon
Jan.	16	Tue	Tue	Tue
Jan.	17	Wed	Wed	Wed
Jan.	18	Thu	Thu	Thu
Jan.	19	Fri	Fri	Fri
Jan.	20	Sat	Sat	Sat
Jan.	21	Sun	Sun	Sun
Jan.	22	Mon	Mon	Mon
Jan.	23	Tue	Tue	Tue
Jan.	24	Wed	Wed	Wed
Jan.	25	Thu	Thu	Thu
Jan.	26	Fri	Fri	Fri
Jan.	27	Sat	Sat	Sat
Jan.	28	Sun	Sun	Sun
Jan.	29	Mon	Mon	Mon
Jan.	30	Tue	Tue	Tue
Jan.	31	Wed	Wed	Wed
Feb.	1	Thu	Thu	Thu
Feb.	2	Fri	Fri	Fri
Feb.	3	Sat	Sat	Sat
Feb.	4	Sun	Sun	Sun
Feb.	5	Mon	Mon	Mon
Feb.	6	Tue	Tue	Tue
Feb.	7	Wed	Wed	Wed
Feb.	8	Thu	Thu	Thu
Feb.	9	Fri	Fri	Fri
Feb.	10	Sat	Sat	Sat
Feb.	11	Sun	Sun	Sun
Feb.	12	Mon	Mon	Mon
Feb.	13	Tue	Tue	Tue
Feb.	14	Wed	Wed	Wed
Feb.	15	Thu	Thu	Thu
Feb.	16	Fri	Fri	Fri
Feb.	17	Sat	Sat	Sat
Feb.	18	Sun	Sun	Sun
Feb.	19	Mon	Mon	Mon
Feb.	20	Tue	Tue	Tue
Feb.	21	Wed	Wed	Wed
Feb.	22	Thu	Thu	Thu
Feb.	23	Fri	Fri	Fri
Feb.	24	Sat	Sat	Sat
Feb.	25	Sun	Sun	Sun
Feb.	26	Mon	Mon	Mon
Feb.	27	Tue	Tue	Tue
Feb.	28	Wed	Wed	Wed
Feb.	29	Thu	Thu	Thu
Feb.	30	Fri	Fri	Fri
Feb.	31	Sat	Sat	Sat
Mar.	1	Sun	Sun	Sun
Mar.	2	Mon	Mon	Mon
Mar.	3	Tue	Tue	Tue
Mar.	4	Wed	Wed	Wed
Mar.	5	Thu	Thu	Thu
Mar.	6	Fri	Fri	Fri
Mar.	7	Sat	Sat	Sat
Mar.	8	Sun	Sun	Sun
Mar.	9	Mon	Mon	Mon
Mar.	10	Tue	Tue	Tue
Mar.	11	Wed	Wed	Wed
Mar.	12	Thu	Thu	Thu
Mar.	13	Fri	Fri	Fri
Mar.	14	Sat	Sat	Sat
Mar.	15	Sun	Sun	Sun
Mar.	16	Mon	Mon	Mon
Mar.	17	Tue	Tue	Tue
Mar.	18	Wed	Wed	Wed
Mar.	19	Thu	Thu	Thu
Mar.	20	Fri	Fri	Fri
Mar.	21	Sat	Sat	Sat
Mar.	22	Sun	Sun	Sun
Mar.	23	Mon	Mon	Mon
Mar.	24	Tue	Tue	Tue
Mar.	25	Wed	Wed	Wed
Mar.	26	Thu	Thu	Thu
Mar.	27	Fri	Fri	Fri
Mar.	28	Sat	Sat	Sat
Mar.	29	Sun	Sun	Sun
Mar.	30	Mon	Mon	Mon
Mar.	31	Tue	Tue	Tue
Apr.	1	Wed	Wed	Wed
Apr.	2	Thu	Thu	Thu
Apr.	3	Fri	Fri	Fri
Apr.	4	Sat	Sat	Sat
Apr.	5	Sun	Sun	Sun
Apr.	6	Mon	Mon	Mon
Apr.	7	Tue	Tue	Tue
Apr.	8	Wed	Wed	Wed
Apr.	9	Thu	Thu	Thu
Apr.	10	Fri	Fri	Fri
Apr.	11	Sat	Sat	Sat
Apr.	12	Sun	Sun	Sun
Apr.	13	Mon	Mon	Mon
Apr.	14	Tue	Tue	Tue
Apr.	15	Wed	Wed	Wed
Apr.	16	Thu	Thu	Thu
Apr.	17	Fri	Fri	Fri
Apr.	18	Sat	Sat	Sat
Apr.	19	Sun	Sun	Sun
Apr.	20	Mon	Mon	Mon
Apr.	21	Tue	Tue	Tue
Apr.	22	Wed	Wed	Wed
Apr.	23	Thu	Thu	Thu
Apr.	24	Fri	Fri	Fri
Apr.	25	Sat	Sat	Sat
Apr.	26	Sun	Sun	Sun
Apr.	27	Mon	Mon	Mon
Apr.	28	Tue	Tue	Tue
Apr.	29	Wed	Wed	Wed
Apr.	30	Thu	Thu	Thu
Apr.	31	Fri	Fri	Fri
May	1	Sat	Sat	Sat
May	2	Sun	Sun	Sun
May	3	Mon	Mon	Mon
May	4	Tue	Tue	Tue
May	5	Wed	Wed	Wed
May	6	Thu	Thu	Thu
May	7	Fri	Fri	Fri
May	8	Sat	Sat	Sat
May	9	Sun	Sun	Sun
May	10	Mon	Mon	Mon
May	11	Tue	Tue	Tue
May	12	Wed	Wed	Wed
May	13	Thu	Thu	Thu
May	14	Fri	Fri	Fri
May	15	Sat	Sat	Sat
May	16	Sun	Sun	Sun
May	17	Mon	Mon	Mon
May	18	Tue	Tue	Tue
May	19	Wed	Wed	Wed
May	20	Thu	Thu	Thu
May	21	Fri	Fri	Fri
May	22	Sat	Sat	Sat
May	23	Sun	Sun	Sun
May	24	Mon	Mon	Mon
May	25	Tue	Tue	Tue
May	26	Wed	Wed	Wed
May	27	Thu	Thu	Thu
May	28	Fri	Fri	Fri
May	29	Sat	Sat	Sat
May	30	Sun	Sun	Sun
May	31	Mon	Mon	Mon
Jun.	1	Tue	Tue	Tue
Jun.	2	Wed	Wed	Wed
Jun.	3	Thu	Thu	Thu
Jun.	4	Fri	Fri	Fri
Jun.	5	Sat	Sat	Sat
Jun.	6	Sun	Sun	Sun
Jun.	7	Mon	Mon	Mon
Jun.	8	Tue	Tue	Tue
Jun.	9	Wed	Wed	Wed
Jun.	10	Thu	Thu	Thu
Jun.	11	Fri	Fri	Fri
Jun.	12	Sat	Sat	Sat
Jun.	13	Sun	Sun	Sun
Jun.	14	Mon	Mon	Mon
Jun.	15	Tue	Tue	Tue
Jun.	16	Wed	Wed	Wed
Jun.	17	Thu	Thu	Thu
Jun.	18	Fri	Fri	Fri
Jun.	19	Sat	Sat	Sat
Jun.	20	Sun	Sun	Sun
Jun.	21	Mon	Mon	Mon
Jun.	22	Tue	Tue	Tue
Jun.	23	Wed	Wed	Wed
Jun.	24	Thu	Thu	Thu
Jun.	25	Fri	Fri	Fri
Jun.	26	Sat	Sat	Sat
Jun.	27	Sun	Sun	Sun
Jun.	28	Mon	Mon	Mon
Jun.	29	Tue	Tue	Tue
Jun.	30	Wed	Wed	Wed
Jun.	31	Thu	Thu	Thu
Jul.	1	Fri	Fri	Fri
Jul.	2	Sat	Sat	Sat
Jul.	3	Sun	Sun	Sun
Jul.	4	Mon	Mon	Mon
Jul.	5	Tue	Tue	Tue
Jul.	6	Wed	Wed	Wed
Jul.	7	Thu	Thu	Thu
Jul.	8	Fri	Fri	Fri
Jul.	9	Sat	Sat	Sat
Jul.	10	Sun	Sun	Sun
Jul.	11	Mon	Mon	Mon
Jul.	12	Tue	Tue	Tue
Jul.	13	Wed	Wed	Wed
Jul.	14	Thu	Thu	Thu
Jul.	15	Fri	Fri	Fri
Jul.	16	Sat	Sat	Sat
Jul.	17	Sun	Sun	Sun
Jul.	18	Mon	Mon	Mon
Jul.	19	Tue	Tue	Tue
Jul.	20	Wed	Wed	Wed
Jul.	21	Thu	Thu	Thu
Jul.	22	Fri	Fri	Fri
Jul.	23	Sat	Sat	Sat
Jul.	24	Sun	Sun	Sun
Jul.	25	Mon	Mon	Mon
Jul.	26	Tue	Tue	Tue
Jul.	27	Wed	Wed	Wed
Jul.	28	Thu	Thu	Thu
Jul.	29	Fri	Fri	Fri
Jul.	30	Sat	Sat	Sat
Jul.	31	Sun	Sun	Sun
Aug.	1	Mon	Mon	Mon
Aug.	2	Tue	Tue	Tue
Aug.	3	Wed	Wed	Wed
Aug.	4	Thu	Thu	Thu
Aug.	5	Fri	Fri	Fri
Aug.	6	Sat	Sat	Sat
Aug.	7	Sun	Sun	Sun
Aug.	8	Mon	Mon	Mon
Aug.	9	Tue	Tue	Tue
Aug.	10	Wed	Wed	Wed
Aug.	11	Thu	Thu	Thu
Aug.	12	Fri	Fri	Fri
Aug.	13	Sat	Sat	Sat
Aug.	14	Sun	Sun	Sun
Aug.	15	Mon	Mon	Mon
Aug.	16	Tue	Tue	Tue
Aug.	17	Wed	Wed	Wed
Aug.	18	Thu	Thu	Thu
Aug.	19	Fri	Fri	Fri
Aug.	20	Sat	Sat	Sat
Aug.	21	Sun	Sun	Sun
Aug.	22	Mon	Mon	Mon
Aug.	23	Tue	Tue	Tue
Aug.	24	Wed	Wed	Wed
Aug.	25	Thu	Thu	Thu
Aug.	26	Fri	Fri	Fri
Aug.	27	Sat	Sat	Sat
Aug.	28	Sun	Sun	Sun
Aug.	29	Mon	Mon	Mon
Aug.	30	Tue	Tue	Tue
Aug.	31	Wed	Wed	Wed
Sep.	1	Thu	Thu	Thu
Sep.	2	Fri	Fri	Fri
Sep.	3	Sat	Sat	Sat
Sep.	4	Sun	Sun	Sun
Sep.	5	Mon	Mon	Mon
Sep.	6	Tue	Tue	Tue
Sep.	7	Wed	Wed	Wed
Sep.	8	Thu	Thu	Thu
Sep.	9	Fri	Fri	Fri
Sep.	10	Sat	Sat	Sat
Sep.	11	Sun	Sun	Sun
Sep.	12	Mon	Mon	Mon
Sep.	13	Tue	Tue	Tue
Sep.	14	Wed	Wed	Wed
Sep.	15	Thu	Thu	Thu
Sep.	16	Fri	Fri	Fri
Sep.	17	Sat	Sat	Sat
Sep.	18	Sun	Sun	Sun
Sep.	19	Mon	Mon	Mon
Sep.	20	Tue	Tue	Tue
Sep.	21	Wed	Wed	Wed
Sep.	22	Thu	Thu	Thu
Sep.	23	Fri	Fri	Fri
Sep.	24	Sat	Sat	Sat
Sep.	25	Sun	Sun	Sun
Sep.	26	Mon	Mon	Mon
Sep.	27	Tue	Tue	Tue
Sep.	28	Wed	Wed	Wed
Sep.	29	Thu	Thu	Thu
Sep.	30	Fri	Fri	Fri
Sep.	31	Sat	Sat	Sat
Oct.	1	Sun	Sun	Sun
Oct.	2	Mon	Mon	Mon
Oct.	3	Tue	Tue	Tue
Oct.	4	Wed	Wed	Wed
Oct.	5	Thu	Thu	Thu
Oct.	6	Fri	Fri	Fri
Oct.	7	Sat	Sat	Sat
Oct.	8	Sun	Sun	Sun
Oct.	9	Mon	Mon	Mon
Oct.	10	Tue	Tue	Tue
Oct.	11	Wed	Wed	Wed
Oct.	12	Thu	Thu	Thu
Oct.	13	Fri	Fri	Fri
Oct.	14	Sat	Sat	Sat
Oct.	15	Sun	Sun	Sun
Oct.	16	Mon	Mon	Mon
Oct.	17	Tue	Tue	Tue
Oct.	18	Wed	Wed	Wed
Oct.	19	Thu	Thu	Thu
Oct.	20	Fri	Fri	Fri
Oct.	21	Sat	Sat	Sat
Oct.	22	Sun	Sun	Sun
Oct.	23	Mon	Mon	Mon
Oct.	24	Tue	Tue	Tue
Oct.	25	Wed	Wed	Wed
Oct.	26	Thu	Thu	Thu
Oct.	27	Fri	Fri	Fri
Oct.	28	Sat	Sat	Sat
Oct.	29	Sun	Sun	Sun
Oct.	30	Mon	Mon	Mon
Oct.	31	Tue	Tue	Tue
Nov.	1	Wed	Wed	Wed
Nov.	2	Thu	Thu	Thu
Nov.	3	Fri	Fri	Fri
Nov.	4	Sat	Sat	Sat
Nov.	5	Sun	Sun	Sun
Nov.	6	Mon	Mon	Mon
Nov.	7	Tue	Tue	Tue
Nov.	8	Wed	Wed	Wed
Nov.	9	Thu	Thu	Thu
Nov.	10	Fri	Fri	Fri
Nov.	11	Sat	Sat	Sat
Nov.	12	Sun	Sun	Sun
Nov.	13	Mon	Mon	Mon
Nov.	14	Tue	Tue	Tue
Nov.	15	Wed	Wed	Wed
Nov.	16	Thu	Thu	Thu
Nov.	17	Fri	Fri	Fri
Nov.	18	Sat	Sat	Sat
Nov.	19	Sun	Sun	Sun
Nov.	20	Mon	Mon	Mon
Nov.	21	Tue	Tue	Tue
Nov.	22	Wed	Wed	Wed
Nov.	23	Thu	Thu	Thu
Nov.	24	Fri	Fri	Fri
Nov.				

Table C.

COMPARISON OF METHODS A,B,C,D & E

Respectively Proposed to Simplify the Months.

A and **C** divide 12 months of 30 and 31 days into Fixed Quarter Years, each consisting of 13 weeks, with week-day names for the same dates in the month recurring every 3rd month; whilst **D** is designed to secure 13 equal months of 4 weeks each, with fixed Quarter Years, and week-days recurring on the same dates every month. **E** adds 1 week to **D**, making 3rd month of 35 days.

METHOD	Week Days	JANUARY	FEBRUARY	MARCH
A 3 months of 30 days with + the last day in each Quarter as a Saturday Holiday.	Su. M. Tu. W. Th. F. Sa.	1 8 15 22 29 2 9 16 23 30 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	6 13 20 27 7 14 21 28 1 8 15 22 29 2 9 16 23 30 3 10 17 24 4 11 18 25 5 12 19 26	4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28 1 8 15 22 29 2 9 16 23 30 3 10 17 24 +
B 2 Months of 30 days. 1 Month " 31 "	Su. M. Tu. W. Th. F. Sa.	1 8 15 22 29 2 9 16 23 30 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	6 13 20 27 7 14 21 28 1 8 15 22 29 2 9 16 23 30 3 10 17 24 4 11 18 25 5 12 19 26	4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28 1 8 15 22 29 2 9 16 23 30 3 10 17 24 31
C 1 Month of 31 days. 2 Months " 30 "	Su. M. Tu. W. Th. F. Sa.	1 8 15 22 29 2 9 16 23 30 3 10 17 24 31 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	5 12 19 26 6 13 20 27 7 14 21 28 1 8 15 22 29 2 9 16 23 30 3 10 17 24 4 11 18 25	3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28 1 8 15 22 29 2 9 16 23 30
D 13 Equal Months, consisting of 4 Common Weeks.	Su. M. Tu. W. Th. F. Sa.	1 8 15 22 2 9 16 23 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	1 8 15 22 2 9 16 23 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	1 8 15 22 2 9 16 23 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28
E 3 months of 4 weeks followed each 3rd month by 1 of 5 weeks, breaking equality and inflating Mch., June, Sept. & Dec. to 35 days each.	Su. M. Tu. W. Th. F. Sa.	1 8 15 22 2 9 16 23 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	1 8 15 22 2 9 16 23 3 10 17 24 4 11 18 25 5 12 19 26 6 13 20 27 7 14 21 28	1 8 15 22 29 2 9 16 23 30 3 10 17 24 31 4 11 18 25 32 5 12 19 26 33 6 13 20 27 34 7 14 21 28 35

Each of these would be an improvement on our present shifting system, but **D** is submitted as the easiest and best of all.

Completes the 1st Quarter of the year, with week ending Saturday, April 7th. The "Old Lady Day" for paying Quarterly and Half-yearly Rents in England now ends on April 7th.

APRIL
1
2
3
4
5
6
7

The Academic "B" Method would not provide the Requisite Conveniences

Some European Academies appear to prematurely favor the following variation of the "B" method suggested on Table C's comparisons of the alternatives outlined in my 1909 paper read before the Royal Society of Canada, as reproduced on the preceding page, with the black rules, etc., added down the side.

The "B" section thereon displays the first 3 months as a typical 91 days Quarter of the year. The 13 weeks of each Quarter-year are suggested for division into 3 months, by arranging 30 days in both the 1st and 2nd months, with 31 days ending the 3rd month only with the last day of the week as Saturday—New Year's Day was in that case provisionally outlined as Sunday.

The academic variation suggested leaves intact the 30 days for each of the two first months of each Quarter of the year, and the 31 days for March, June, September and December, but would end *only these 4 months* with the week on Sunday.

Its advocates thus suggested that all weeks should begin on Monday, instead of the Sunday now recognized as the 1st day of the week—in order to locate New Year's Day as Monday.

The International Reform League has not been able to trace any adequate cause or justification for that proposed change in the beginning of the week, which would raise entirely needless difficulties, without compensating advantages.

We need only refer to one practical inconvenience that would handicap our wives, mothers and housekeepers most—just at the time they need most consideration, whilst preparing their best for the home-feasts and joys of Christmas and New Year's Day.

That academic, unpractical scheme to fix Christmas and New Year's Day as Mondays, would unfairly compel housewives and many others to buy earlier and do most of their cooking on Saturday (or break Sunday's Rest), inflicting staler food on our digestions when being most heavily taxed at the Year's-end.

That is not fair to our good folks at home and is not likely to be accepted by the Official International Conference.

Some of the academicians of Europe claim in preliminary conference that the nations could thereby gain *an equal number of working days in each month*.

But while that technically appears to be the case, it is misleading and only of small advantage, because the work-day-values of those working-days differ in each of the three months. That difference is too much to be acceptable to the commercial authorities who virtually predominate in all the great nations—and form the controlling forces as President Hadley of Yale University (U. S. A.) in 1903 so tersely stated when concluding with the words: "*This reform with its months of 4 weeks will surely come, because it is a commercial necessity.*"

Here it is highly important to emphasize the fact that the advantage obtainable through the "4-week-month" fitting all months as easily and completely as the weekly 7 days now fit current weeks, will continuously give far more practical benefits and conveniences to every human being in home-life, social and commercial affairs—than the combined fixing of "Skip-day," Easter and the proposed Academic arrangement of 30, 30 and 31 day months per Quarter Year.

The latter necessitates 5 Mondays and Tuesdays in January, April, July and October; 5 Wednesdays and Thursdays in February, May, August and November; also 5 Fridays, Saturdays and Sundays in March, June, September and December.

That, we respectfully submit, would foolishly perpetuate the present jumble of unequal months in but trivially improved form—and leave the multitude of people in every nation without clear ideas as to what the length of a month really is—because the broken weeks between 2 out of every 3 of the Academic months would be left to baffle the practical people and handicap workers in such ways as the following:

1. All persons then paid monthly would, out of every 2nd months' salary or wages, have to purchase their 5th week-end's provisions and pay for their 5th weekly lodgings, rooms or rent of houses, etc., in every 3rd month.

2. All workers paid half-monthly would be worse inconvenienced at the end of every 3rd month, and further during each triplet of months would have to draw their mid-monthly pays up to Monday the 15th of the 1st months; to Wednesday the 15th of the 2nd months, and up to Friday the 15th in all the 3rd months.

Quarter Years can be Equalized in Year of 13 Months

3. All who are paid every 2 weeks would have to be paid up to the 13th and 27th of the 1st months, the 11th and 25th of the 2nd months, and up to the 9th and 23rd of the 3rd months—leaving 1 week's pay hanging fire over the end of each 3rd month ending the Quarter Years.

4. All employees paid weekly would have 2 days overhanging each 1st month and 4 days over each 2nd month of each Quarter Year.

With the exception of the latter, all the above would prejudicially affect the home-life of those myriads of workers, and including the latter would cause much needless trouble in commercial accounting, ascertaining the costs of production, etc.

That extra trouble causes extra cost and heaps a little more on the Cost of Living.

Most of the employees in the heavier trades cease work about noon on Saturdays, while others, such as coal-miners, seldom work at the mines on Saturday. On the other hand Retail Traders and Storekeepers on Saturdays generally do more than double the volume of business transacted on Thursdays.

Those and many more practical facts disprove the alleged Equality in the Earning and Spending Values on the broken months those Academicians voted for without sufficient practical experience to enable them to wisely recommend those artificial months.

The mere counting of the same number of working-days of different values can only mislead theorists who have not been able to fully consider the far-reaching advantages of the proposed permanent months of 4-weeks each for all the great world-wide purposes for which they are urgently needed.

It is because the easier adoption of the 4-week-month would entirely remove all those and very many other objectionable inconveniences, and also save much valuable time and labor now wasted, that the International Almanak Reform League feel it to be their duty to themselves, their children and humanity at large—to advocate the early adoption of the 13-months' year, with a new-month between June and July because they believe it is the best in every way, for general purposes in all nations.

The best authorities are agreed that the insertion of the new month there could be as easily effected as was the 29th of February in Leap-years. No more inconvenience would result, but on the contrary far

greater calendar conveniences and facilities would be won for us all to enjoy every day.

22. There would be a slight difficulty at the outset in readjusting the monthly rate of salaries now paid regardless of the number of working days, but these would easily be computed once for all time, *per* Computation Tables on pages 89 and 90. Twelve divided by thirteen equals .923, so that \$100 per month for twelve months now would be \$92.30 per month under the new system of thirteen months of four complete weeks, giving *regular* payments to all and avoiding the *fifth week-end expenses* which now cause housewives, and all who have to pay *weekly* for rent, food, etc., needless trouble and some anxiety when five Saturdays occur in 30 or 31 day months.

QUARTER YEARS EQUALIZED

A few Europeans, who at first thought that to keep quarterly periods equal for insurance, etc., it would be advisable to include the thirteenth week of each quarter as a fifth week in March, June, September and December, were agreeably surprised on finding that the completion of all the quarter-years would be more conveniently met with the week-end as per Table D.

Then every "Quarter" would be equal, whereas now they range from 90 to 93 days, with their working days varying from 75 to 78 days, making a difference in manufacturing output of four per cent., although such "fixed charges" as rent, insurance, etc., remain constant for every Quarter of the year.

Comparison of British working days in the years 1902-3-4:

Quarters—	1902	1903	1904
Ending March 31-----	75	77	78
" June 30 -----	77	75	75
" September 30 -	77	76	77
" December 31 -	78	78	78

Half Years—

Ending June 30 -----	152	152	153
" December 31 -	155	154	155
Year -----	307	306	308

The number of days in half-years and years accounts for the calendar fluctuations of business, dividends and the resulting Stock Exchange gambling for "differences" as explained on pages 34 and 44 of the Rational Almanak, and evidenced by Table E.

Further, the fact that monthly payments for salaries, accounts, etc., are many thousand times more numerous than the odd "quarter" charges has lead the leaders of business to urge the universal adoption of the proposed "Yearal."

THE "YEARAL" with 12 EQUAL MONTHS and QUARTER YEARS

Table D. Proposed "YEARAL" of FIXED DATES suggested for each day in EVERY YEAR following 1916.

WEEK DAY	JAN. 1	FEB. 2	MAR. 3	APR. 4	MAY 5	JUN. 6	JUL. 7	AUG. 8	SEP. 9	OCT. 10	NOV. 11	DEC. 12	WORK DAYS
Sundays	1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	SUN. 1	
Mondays	2	2	2	2	2	2	2	2	2	2	2	2	1
Tuesdays	3	3	3	3	3	3	3	3	3	3	3	3	2
Wednesdays	4	4	4	4	4	4	4	4	4	4	4	4	3
Thursdays	5	5	5	5	5	5	5	5	5	5	5	5	4
Fridays	6	6	6	6	6	6	6	6	6	6	6	6	5
Saturdays	7	7	7	7	7	7	7	7	7	7	7	7	6
Sundays	8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	SUN. 8	
Mondays	9	9	9	9	9	9	9	9	9	9	9	9	1
Tuesdays	10	10	10	10	10	10	10	10	10	10	10	10	2
Wednesdays	11	11	11	11	11	11	11	11	11	11	11	11	3
Thursdays	12	12	12	12	12	12	12	12	12	12	12	12	4
Fridays	13	13	13	13	13	13	13	13	13	13	13	13	5
Saturdays	14	14	14	14	14	14	14	14	14	14	14	14	6
Sundays	15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	SUN. 15	
Mondays	16	16	16	16	16	16	16	16	16	16	16	16	1
Tuesdays	17	17	17	17	17	17	17	17	17	17	17	17	2
Wednesdays	18	18	18	18	18	18	18	18	18	18	18	18	3
Thursdays	19	19	19	19	19	19	19	19	19	19	19	19	4
Fridays	20	20	20	20	20	20	20	20	20	20	20	20	5
Saturdays	21	21	21	21	21	21	21	21	21	21	21	21	6
Sundays	22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	SUN. 22	
Mondays	23	23	23	23	23	23	23	23	23	23	23	23	1
Tuesdays	24	24	24	24	24	24	24	24	24	24	24	24	2
Wednesdays	25	25	25	25	25	25	25	25	25	25	25	25	3
Thursdays	26	26	26	26	26	26	26	26	26	26	26	26	4
Fridays	27	27	27	27	27	27	27	27	27	27	27	27	5
Saturdays	28	28	28	28	28	28	28	28	28	28	28	28	6

N.B.—The 13 weeks per Quarter-Year would end April 7, Sol 14, September 21 and "Skip-Day"

"Skip-Day"

and

"Leap-Day"

OR

TABLE E. The following comparison of Calendar-created differences in the Earnings of typical small shipowner, colliery company and railway company demonstrates the inequalities between early and spending time, which the suggested reform would make easily comparable.

DIVISIONS OF THE YEAR.	1900.	1901.	1902.	1903.	1904.	1905.
MONTHS.						
JANUARY	27	27	27	27	26	26.
FEBRUARY	24	24	24	24	25	24
MARCH	27	26	24	26	27	27
APRIL	23	24	26	26	25	23
MAY	27	26	26	26	27	27
JUNE	26	25	25	26	26	25
JULY	25	25	25	25	25	25
AUGUST	26	26	25	26	26	26
SEPTEMBER	25	25	25	25	25	25
OCTOBER	27	27	27	27	26	26
NOVEMBER	26	26	25	26	26	25
DECEMBER	26	25	25	26	27	25
QUARTERS.						
3 Months ending:						
March 31st	78	77	75	77	78	77
June 30th	75	75	77	75	75	75
September 30th	76	77	77	76	77	77
December 31st	78	78	78	78	78	77
HALF-YEARS.						
6 Months ending:						
June 30th	153	152	152	153	153	152
December 31st	154	153	156	154	156	154
CALENDAR YEAR.						
12 Months ending:						
December 31st	367	367	367	368	368	368
Odd work days recurring on 31 dates every year.						
	M. Tu. W. Th. F. Sat.					

The heavy figures in this Table show how that senseless changing of Festival Dates varies the working days in our month

The changes between the heavy-typed figures and their adjoining figures for the months of March, April, May and June were caused by the drifting of Easter and Whitsunside Holidays.

To show how the variation of week-day names for yearly dates, Easter, etc., affect the earnings of shopkeepers, manufacturers and Railway Companies, etc., further Table is appended.

WEEKLY MONTHLY and HALF YEARLY GROSS EARNINGS.

Railway Co.	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3
-------------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	---

In compiling the above monthly appointment book the following British holidays have, for simplicity, been treated as Sundays:—

	1901.	1902.
Good Friday	April 1	April 21
Easter Monday	April 4	April 24
Whit-Monday	May 23	June 7
Let Monday in August	Aug. 7	Aug. 25
Christmas Day	Dec. 25	Dec. 26
Boxing Day	Dec. 26	Dec. 26

Taking the last published Report of the Board of Trade on Railways for the year 1912 as our basis, we may extract the following items of expenditure, which will not be increased by the two extra work days in 1904.

General Charges	..	..	53 per cent. of Total Receipts.
Kings and Taxes	..	..	" "
Legal and Parliamentary Expenses	..	..	" "
Interest	..	..	" "
Miscellaneous	..	..	" "
			20

Adm 4 the following, as they would not be at all likely to be increased by so much:—

Maintenance of Way	...	51
and Works ...	...	91
Repairs and Renewals	...	...
to Carriages and	...	...
Wagons ...	...	59
		<u>3142 = 73</u>

Thus on the extra £20,000 there would be -- 15% less Expenses incurred, -- 10% of Receipts expended by them the average -- 10% of Receipts expended by British Railway, therefore the results would be as follows:--

	1903.	1904.	1905.
Receipts ..	£ 8,126,000	£ 8,166,000	£ 8,135,000
Expenditure ..	£ 3,184,300	£ 3,177,300	£ 3,174,300
6% of £ 3,175,000 =		£ 100,500	
6% = 15 7/8 %		15.75	
= 46.6 % of £ 3,000,000 =		£ 1,539,520	
Net Receipts	£ 1,861,200	£ 1,866,400	£ 1,860,700
(a) Average of 6% of Profits readily go to British Preference and Debenture Holders.	1,866,400 (100%)	1,866,400	1,866,400
Leaving Balance for Ordinary Shareholders	£ 741,800	£ 774,400	£ 733,000
Difference	+ £ 12,700	- £ 20,700	

The combined difference of **\$33,210** paid in Ordinary Dividends is caused by the Alnace, and over the whole British Railways in the ratio of Net Receipts would amount to as **£1,364,440**; **£81,628,502** :: **£11,516** :: **£790,236**, which is quite sufficient to induce a great gamble of the part of the thousands who are seeking to thereby gain what they can of it.

THE PROPOSED "SKIP-DAY" MAY MOVE SUNDAY

The Chief Questions the Official International Conference will assemble to decide, are indicated on the cartoon printed upon the back-cover.

As the contemplated insertion of "Skip-Day" may move Sunday,—and some discussion may arise concerning the proposed 13th month, the following notes are appended for readers whose time for research is limited.

While any 12 months arrangement ending where Dec. 31st now closes the year, might, by inserting the "Skip-Day" forthwith secure a Fixed Calendar, that might not be absolutely final and universally adopted, as would the year ending with Nature's on Dec. 22nd, it would (with the exception of world-wide unity and international accounts) bring nearly all the other practical advantages reformers are striving to permanently win for humanity's daily convenience.

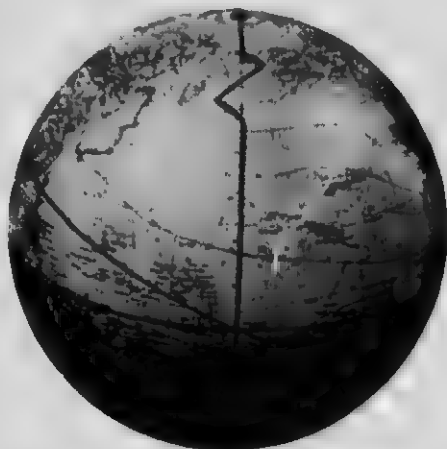
There are many business advantages that would result from having a fixed and easier working calendar for all the 364 days, plus that last day of each year thus freed for stocktaking and the final closing of all wages with other accounts, etc., concurrently with the ends of week, month, quarter, half-year and year.

As odd extremists have falteringly feared that some imaginary disadvantage might result if the "Skip-day" as a duplicate Saturday was inserted at the year's end and thus moved Sunday to the next day, the International Conference may advise that the "Skip-day" be reserved for "Rest" as Sunday.

But its observance as a duplicate Saturday is more likely, because most people prefer to have Saturday's freedom to do whatever they deem best on that proposed year-ending holiday, on which all who prefer to rest or go to church should be free to do as they please. They can then be all the more happy to rejoice in observing the next day as the Sunday beginning the New Year.

Practically all enlightened people know that when they travel from one part of the Earth to another they change their Sundays, as indicated by the page 69 Cartoon of Standard Time around the World at 6 p.m. on Sunday in England, which portrays the fact that while British citizens are at Church on Sunday their relatives in America, Australia and elsewhere may be at work, as part of a work-day is current with them at that precise time.

Further, the fact is well-known that all voyagers across the Pacific Ocean, who cross the "Standard Time Line" shown upon the following photograph of that side of the Globe, "lose one day when travelling Westbound, and gain one day when cross-



The "STANDARD-TIME-LINE" dividing the World's Days down the Central Pacific (180th) Meridian.

The removal of Sunday by one International "Skip-day" or "Rest-day" being inserted each year, will not change the Weather; but it will result in more mutual consideration between all Nations and Creeds, thus tending to establish permanent Peace and good-will. In that quiet way it will help forward the best interests of humanity.

ing Eastbound," yet neither the advance of Sunday by one day, nor its being deferred one day, have had any adverse effect upon anyone.—Nor does anyone dream of quibbling about the change.

Some good persons may be at first inclined to think that some disadvantage to the observance of Sunday might arise through the proposed insertion of the "Skip-day" as a duplicate Saturday International Holiday between the last Saturday and Sunday of each year—because that would alter by one day the weekly recurrence of Sunday.

But when the more balanced minds among those temporary hesitants reflect that it is impossible for them—or even the most enlightened aggregation of scholars or historians—to now either distinguish or locate the particular day on which the first week began, they will realize how foolish they would be to discredit any sect or creed of worshippers by trying to stand on such a mere imaginary ground of shifting objection.

The only historic fact those few extremists among Christians can plead is, that after their Lord and Master's death a few early Christians devoutly changed their "Day of Rest" one day from the time-honored Jewish Sabbath, with far less warrant than an International Congress can and will soon do again, to benefit humanity.

How many changes were made before, or how many days missed, can never be ascertained.

UNITED PEACE and REST on ANY 7th DAY constitute SUNDAYS

It is not advisable to neither will time or space admit of here discussing the pharisaic and utterly futile controversy as to whether our current Sundays recur on any particular 7th multiple of any of the 7 days of the Biblical record of Creation, which *vide* Genesis 2, v. 3 reads, "And God blessed the Seventh Day and sanctified it, because that in it He rested from all His Work."

It is that rest for humanity, on any 7th day, which gives all Sabbaths alike their pre-eminence, whether observed on our Sunday, or by the more fervent Mahomedans and other sects of equally earnest God-fearing worshippers who now celebrate their Sabbaths on our Fridays—or by the Jews and their compatriots who believing themselves to be the race special chosen by God, adhere to their original Sabbaths still celebrated on our Saturdays, although they through Moses derived their week of 7 days and Sabbath from the Egyptians—merely moving Saturday from the Egyptian first day of the week, to be the Jewish last day of the week.

All races and creeds under Heaven should therefore unite to annually celebrate the closing day of each year as an International Holyday or "Rest-day" to promote Rest, Peace and Goodwill throughout mankind, and welcome the change that will enable the noblest people of every creed on earth to unite on the same day as Sabbath at least once in every 7 years to mutually worship the Eternal Creator in harmony.

The world-wide benefits of such reunions, varying with each 7 years, will naturally and surely lead to blending the worship of all humanity into one glorious united Sabbath, wherein all will most heartily unite with the Psalmist in singing that noblest verse the most inspiring of poets wrote and taught all Mahomedans, Israelites and Christians alike, to sing in both Bethlehem and Jerusalem (where all now hold their Sunday worship in the same churches on our Fridays, Saturdays and Sundays respectively) from Psalm 118, v. 24:

"This is the Day which the Lord hath made; we will rejoice and be glad in it."

Let not the rulers of any section of either the Christian churches nor any other of the too many sects, warp their fields of usefulness as did the narrow-minded ruler of the synagogue when their Lord Jesus Christ helped up the infirm woman, when (*vide* Luke 13, v. 14) "the ruler of the synagogue answered with indignation, because that Jesus had healed on the Sab-

bath day, and said unto the people: There are 6 days in which men ought to work; in them, therefore, come and be healed, and not on the Sabbath day."

Even our medical men would not dare to hold to that! Such reactionary and intolerant views concerning any special day disappear like the mist the rising sun dispels alike on every day however named by us. That they had no weight with that greatest authority on Christianity, St. Paul, is evident from his greatest of Epistles, as when writing to the Romans in Chapter 14, concerning how to treat weaker brethren who should not be condemned for indifferent things, he thus writes in verses 5 and 6 emphasizing his breadth of mind on this particular point of which day shall be the Sabbath:

"5. One man esteemeth one day above another: and another esteemeth every day alike. Let every man be fully persuaded in his own mind."

"6. He that regardeth the day, regardeth it unto the Lord; and he that regardeth not the day, to the Lord he doth not regard it."

Finally it will be evident to all reasonable readers, who rightly consider the page 69 cartoon, that even people of the same religion amidst the great populations on different continents, "now have to use parts of their homeland week-days as Sundays whenever they migrate either Eastwards or Westwards—as, for instance, British people or other Europeans who go to Australia, New Zealand, Canada or the United States or countries of South America.

Yet no one even from His Holiness the Pope downwards can truly say either that anyone thus migrating has been prejudiced by that partial divergence from their homeland Sunday times, or that they will be in anywise prejudiced if the extra day's rest is given to toilers in all nations on the closing day of the year, and Sunday is thereby moved one day to promote greater convenience and blessing to all humanity.

As a few superstitious people have a slight misgiving that it might be "unlucky" to have 13 months in the year,—even if such months are equal,—we will dispel that fading thought by the most prominent facts concerning the world-wide-use of 13.

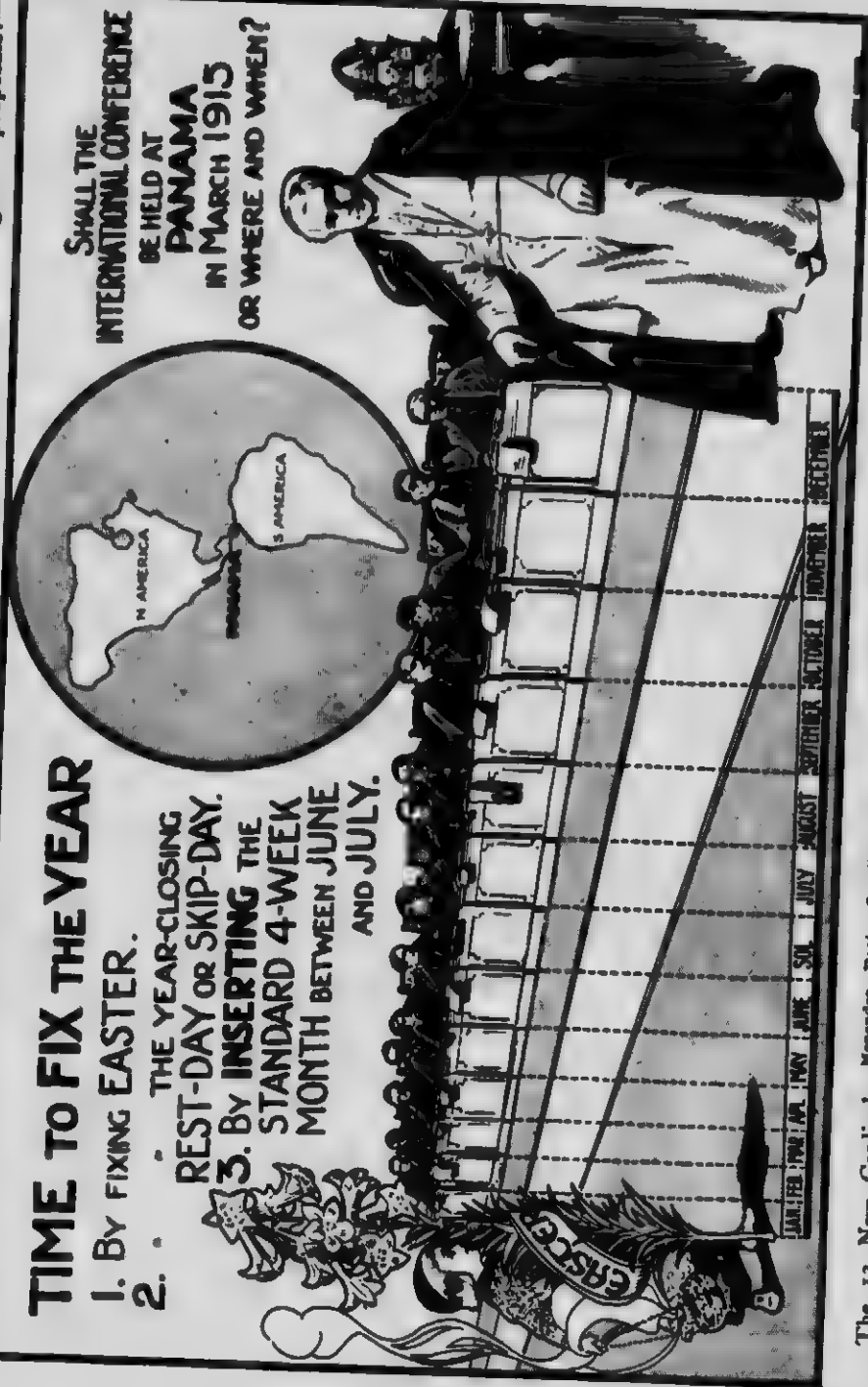
Such facts as the 5 following, culled from a vast number, convince sensible people that there is not the slightest element of justification for the mistaken belief a few odd persons lingeringly hold in the alleged unluckiness of the number 13:

The POPE and CARDINALS of the Catholic Church—do not believe in "LUCK." They are considering these proposals:—

TIME TO FIX THE YEAR

1. BY FIXING EASTER.
2. THE YEAR-CLOSING REST-DAY OR SKIP-DAY.
3. BY INSERTING THE STANDARD 4-WEEK MONTH BETWEEN JUNE AND JULY.

SHALL THE
INTERNATIONAL CONFERENCE
BE HELD AT
PANAMA
IN MARCH 1913
OR WHERE AND WHEN?



The 13 New Cardinals created at the Vatican on May 25th, 1914, demonstrate the fact that the oldest, greatest and most cosmopolitan of Christian Churches does not regard the number 13 as any more "unlucky" than we regard the Storekeeper who sells 13 oranges per dozen (12), or when we play with cards having 13 in each of the 4 suits, or have lived through our 13th year of life, or use the 13 weeks we always have in each Quarter, to form the 13 months per Year. The fact that one of those 13 newly elected Cardinals (Chiesa) has since become Pope, dispels any idea of the number 13 being "unlucky" for him.

FUTILITY of DECRYING the NUMBER 13 as UNLUCKY

(1). The United States of America began their independence as the original 13 States, whose people have been the luckiest on Earth ever since. So complete is the confidence of the citizens of that most energetic nation of the world in the *good luck* those 13 States brought them, that they are now deciding to stud them as the 13 central stars to form the centre-piece of their proposed new national flag. Around those 13 stars are to be encircled the less glorious stars representing the newer States since linked up around the thus exalted 13 stars, which have always been the gems in the "Great Seal" of the United States, whose more than 100,000,000 citizens are delighted to get those 13 sealed stars imprinted on their Title Deeds for land, etc.



GREAT SEAL of the UNITED STATES.

It is a remarkable coincidence that there are 13 constituent parts of the likewise lucky Canada, corresponding to those 13 original States of the Union, thus:

UNITED STATES	CANADA
Connecticut	Alberta
Delaware	British Columbia
Georgia	Manitoba
Maryland	New Brunswick
Massachusetts	Newfoundland
New Hampshire	Northwest Territory
New Jersey	Nova Scotia
New York	Ontario
North Carolina	Prince Edward Island
Pennsylvania	Quebec
Rhode Island	Saskatchewan
South Carolina	Ungava (Labrador)
Virginia	Yukon

(2). The "British Empire" is the greatest and luckiest empire mankind have ever known—yet it has 13 letters in its name, and consists of these 13 constituent parts: England, Scotland, Ireland, Wales; Canada, Australasia, South Africa; India,

Egypt, East African, West African, East Indian and West Indian Colonies.

Similarly there are 13 countries in Asia and 13 in South America; but the number 13 has nothing whatever to do with making them either lucky or unlucky.

(3). His Holiness the Pope, at Easter, 1914, created 13 Cardinals in one go, and those 13 are considered by the adherents of that most cosmopolitan and numerous church organization in Christendom to be the luckiest of men—one of the 13 last elected was created Pope at the next Convocation.

(4). The many people who use playing "cards" nearly always have "10 spot cards" plus Jack, Queen, King, totalling 13 in all 4 suites—yet that number 13 (which was derived from the 13 weeks in each Quarter of the "13 weeks' year") does not have the slightest effect upon the "luck" of any player, and never had, as all play with 13 cards in each suite.

(5). Every human who has attained to years of discretion has lived through the most vigor-producing 13th year of life, and been so lucky that both he and she have survived ever since to perpetuate and improve the future of the human race.

The easiest and quickest method by which we can expedite that improvement throughout every nation is to Internationally agree to universally use the simplest month of 4 complete weeks 13 times each year, as depicted in the "Yearal" frame on the back cover—and thereby make this and future generations luckier than all their ancestors—securing equal and permanent months with day-names fixed for greater convenience throughout all Time.

The few people who clutch at the number 12 as though it was a life-buoy will survive more conveniently on the number 13, because months will pass more equably when their lengths are equalized to 4 weeks each, as those great steamship and banking companies, who are now using 4 weeks periods for accounting, are proving by experience.

We have to use 13 weeks in each Quarter of the year; so why not use 13 equal-months with their 4 fixed weeks most conveniently quartering every month?

We British people have far too long been dominated by the number 12 as instanced by our trying to maintain justice by "holding up" juries till all 12 agree, with the result that far too many scoundrels have escaped just penalties, simply because we were too proud to acknowledge the better system of other nationalities who maintain better justice by deciding that the verdict of a two-thirds or more majority shall be law.

86
HOW PEACOCKS' FEATHERS were declared "UNLUCKY."



LADY OF THE MANOR—"John, dear, those lads and lassies have plucked out all the finest peacock feathers, and only left us the scrag. I wanted some for our vases and for our friends the Browns and Greens to decorate their drawing-rooms."
 "You will stop those vulgar youths from getting them, won't you, dear?"

LORD OF THE MANOR (to the youthful employees who appreciate "fine feathers")—"Hey, boys! Don't you know how **UNLUCKY** it is to wear peacock feathers?"
 (Aside to the lady)—"That's scared the girls! You'll easily keep your fine feathers now!"
 Thus was the false belief that Peacock's Panthers were to be regarded as "unlucky," inaugurated to over-awe milk-maids and plough-boys.

LUCK is a mental delusion—further removed from truth and reason than the "Will-o'-the-Wisp's" misleading light deludes the laggard going home, by its flickering spark of marsh-gas ignited spontaneously.

The number 13 has neither more nor less chance than any other number. If 1,000 peas are put into a bag, the 13th will have the same 1000th chance as any of the other 999, of being drawn out first, last, or any intervening number.

The fact that the 13-lined-squirrel of U. S. A. has 13 stripes, alternately spotted like the 13 "Stars and Stripes"—from which they were named by patriotic Dr. S. L. Mitchill in 1821, when there happened to be 13 original States—does not diminish the good fortune of those delightful nut-secreters in New York parks, who variously have 6 to 8 body-length-stripes with 5 or 7 rows-of-spots. *Vide Spermophilus in the Century Dictionary.*

When we recall the fact that on the 13th of May, 1865, the Confederation hostility in the Civil War was ended, and the Greater United States then unified, also that the number 13 has happened to be so conspicuously favorable in United States affairs, we may see how foolish is the vanishing cry of the little 13 club of lop-minded pessimists, whose unbalanced brains evolve those foolish premonitions about 13 which by obsession they allow to obscure the sure

reasoning of mathematical figures, whether concerning 13 or any other number.

The plain fact is that belief in "luck" is a symptom of distorted mind, generally impressed by weak parents during childish years, or later acquired through gambling habits from the perverse or over-awed minds of gamblers.

During the years of fearful wars and slavery preceding Julius Caesar, the masses of the ignorant people were covered into belief in luck.

Jugurtha, King of Numidia, proved Roman leaders were bribed. The powerful and wealth-grasping governors of Roman provinces gratified their avarice by coercing Pontiffs to insert 13th months unduly to extort more wealth through that extra month's taxes.

The haphazard and arbitrary ways by which both the Jewish Sanhedrin and Roman Pontiffs before the Christian Era secretly inserted the 13th Lunar-month, as previously mentioned (see Index), prevents the location of the years preceding Julius Caesar's power, when excessive 13th moon-months were inserted—so the year 60 B.C. on the cartoon, is only an approximation.

But the historic fact is beyond dispute, that when Julius Caesar arose to power in 49 B.C. he found the Roman years nearly 3 months out-of-gear from the seasons. He rectified that discouraging agricultural abuse in the "Year of Confusion" (46 B.C.), then extended to 445 days.

87
 NOW 13 WAS FOISTED UPON PRE-CHRISTIAN EUROPEANS AS A BOGUS
 "UNLUCKY NUMBER"



Right Pontiff (aside to Left Colleague)—If we let these greedy pro-consuls grab such extra profits too often, by inserting the 13th moon-month at their command, the land-owners and farmers won't get crops enough to pay the tithes due to us. Rememberest thou that we suffered short rations last time we declared a moon too many in the year?

Left Pontiff (to 3 pro-consuls)—Your mighty minds know how willing we have been to meet your wishes in past years. But lo, the Gods through their Oracles have declared against your request. Did not your lands like ours suffer from shortage of crops whilst the people endured famine after former 13th moons were declared? Did not your predecessors suffer violent deaths during years following those having 13 moons? Therefore the Gods declare through us to you and to all men that "IT IS UNLUCKY to have 13 MOONS in the YEAR!"

Right Pontiff (aside to Left)—That's scared them and will relieve us from being used to enable selfish consuls to extort a 13th month's taxes from the people by muddling ideas of months.

Then it certainly was "unlucky" for the taxpayers thus unjustly forced to pay extra taxes. But now the permanent insertion of the 13th month of 4 weeks between June and July is the best means to surely win the equal months most needed to FIX day-names in months and years.

How easily those Calendar abuses could be perpetrated for private gain to those in power may be seen from the fact that the "Metonic Cycle" of 19 years required 13th moons to be inserted in the 3rd, 5th, 8th, 11th, 13th, 16th and 19th years, for which Meton, the Astronomer, in 433 B.C. received ovation at the Olympic Games.

But be it noted, that during following centuries the Roman Calendar-dictators kept the intercalation of the 13th moons secret and mystified its use by artificial deviations, such as changing the Olympiads from Full Moons to the 11th day, and imposing wrong 13th months. Thence arose the 80 days Julius Caesar adjusted.

LIBERTY AND TOLERATION NOW FACILITATE REFORM

There is no more luck in 13 than 12, as proved by the myriads of families who by putting one egg extra "for luck" place 13 under fowls hoping they will hatch out 12 and find themselves most lucky when 13 chicks appear. Similarly people in our cities induce bakers to give a 13th bun "per dozen"—thus continuously making more attractive the number 13.

During the nearly 2,000 years which have elapsed since the 13th month's unjust taxation was imposed by Roman Rulers upon taxpayers who naturally felt that the 13th exaction was rightly named "unlucky"—such factors as the foregoing have almost banished the idea of "luck in numbers" from the minds of sensible people now enlightened by education and world-wide intercourse. Knowledge founded upon realities has practically swept aside the last vestige of such craven ideas as "un-luck in 13," from the minds of progressive humanity.

The great advance in religious liberty and toleration made since the harsh times of Reformation has been most powerfully helped by the colonization of America, where all Races and Creeds are "free to pursue their own happiness" as the Declaration of Independence provides. We need only instance the widespread use of that simple elevating book, "*Social Worship*," published by the Westminster Co., Toronto, which was originated by Sir Sandford Fleming for the use of men of all creeds whilst building the Canadian Pacific Railway, and is now used mutually by Catholics and Protestants from all the Christian Churches on board ocean ships, because the leaders of all united in selecting the hymns, prayers and scripture readings free from dogma, in words all most cordially approve.

The fact that Protestants attending Roman Catholic schools in America are not required to be present during catechism instruction emphasizes the spread of mutual consideration during the 162 years elapsed since the last European (British) Reform of the Calendar left out 11 days in 1752.

In Canada some of the most thoughtful Protestants now move their children from the Free Public Schools to pay at the Roman Catholic Seminaries because (especially in British Columbia) that simplest but greatest character moulding book, the Bible, is not allowed to be read in Public Schools.

ECCLESIASTIC AUTHORITIES ENCOURAGE REFORM

(Summarized by John C. Robertson, Kirkcaldy, Scotland)

Reports from the Holy Synod of Russia, Roumania, Servia, Montenegro and Greece, also the Patriarch of Jerusalem, were furnished to the London International Congress of Chambers of Commerce, by M. Georges Stringo, The Piræus, Greece, and were generally favorable to the considering of the question of Calendar Reform. The Holy Synod of Russia referred to the Czar having appointed a Commission from the members of the Imperial Academy of Science to study the modifications which could be made on the Julian Calendar.

"The efforts to fix the date of Easter will not encounter serious opposition on the part of the Catholic or Protestant Churches."—From the report of the MAATSCHAPPY VAN NYVERHEID, Haarlem, Holland, as summarized by the London Chamber of Commerce.

Dr. Grouitch, representative of the Servian Government, stated to the Congress that they were favorable to a Reform of the Calendar, so as to suppress the inconvenience arising from the existence of two differing Calendars, and that the Holy Synod of Servia was now favorable to the Reform of the Calendar being considered by all the Orthodox Churches.

"Conversation with the late Bishop of Truro, and later with other influential leaders of the Established Church and Non-conformists in England, as well as the very influential Papal Authority of the Roman Catholic Church, with whom I was privileged to discuss the matter in Rome, leads me to believe that there is a very encouraging prospect of the suggested Reform being carried into effect."—MOSES B. COTSWORTH, in *The Rational Almanak*.

M. Louis Canon-Legrand, President of the Congress, intimated that the Belgian Minister of Foreign Affairs had written to him on 12th June, 1910, that the question of the Reform of the Calendar was being favorably considered by the *Vatican Council*.

The President also, during the discussion on the Calendar question, read a telegram from Switzerland, as follows: "The Conference of the Swiss Reform Churches, after discussion in their sitting today, 21st June, sends to the International Congress of Chambers of Commerce, at London, the unanimous wish to see the date of Easter fixed."

As the adoption of 13 months per year will require some use of a 13, times multiplication table and divisions, the following 3 tables are submitted for inclusion in the International Calendar Legislation, to facilitate calculations by 13, which can thereby be computed more readily than ordinary calculations for 12 months are now arithmetically made by mental use of the 12 times table. These 3 tables when printed in bold type on 2 sides of a card, can be used more accurately, quickly and easily than most arithmeticians can calculate by the 13 times table, which is very easy to learn up to the 9 times limit, indicated between these tables, for all calculations re 13 months.

Product Table for Numbers $\times 13$
ex Cotsworth's Direct Calculator "O"

13	0	100	200	300	400	500	600	700	800	900	1000
0	0000000000	1300000000	2600000000	3900000000	5200000000	6500000000	7800000000	9100000000	10400000000	11700000000	13000000000
1	0000000000	1300000000	2600000000	3900000000	5200000000	6500000000	7800000000	9100000000	10400000000	11700000000	13000000000
2	0000000000	2600000000	5200000000	7800000000	10400000000	13000000000	15600000000	18200000000	20800000000	23400000000	26000000000
3	0000000000	3900000000	7800000000	11700000000	15600000000	19500000000	23400000000	27300000000	31200000000	35100000000	39000000000
4	0000000000	5200000000	10400000000	15600000000	20800000000	26000000000	31200000000	36400000000	41600000000	46800000000	52000000000
5	0000000000	6500000000	13000000000	19500000000	26000000000	32500000000	39000000000	45500000000	52000000000	58500000000	65000000000
6	0000000000	7800000000	15600000000	23400000000	31200000000	39000000000	46800000000	54600000000	62400000000	70200000000	78000000000
7	0000000000	9100000000	18200000000	27300000000	36400000000	45500000000	54600000000	63700000000	72800000000	81900000000	91000000000
8	0000000000	10400000000	20800000000	31200000000	41600000000	52000000000	62400000000	72800000000	83200000000	93600000000	104000000000
9	0000000000	11700000000	23400000000	35100000000	46800000000	58500000000	70200000000	81900000000	93600000000	105300000000	117000000000

The left-side figures 1 to 99 number the lines to 99 number the lines to 99, while the top line denotes the 9 hundreds heading their respective columns, so that any required answer up to the number 999 is found at the intersection of the numbered line where it crosses each line. The "tens and units" of products for small table are in last column and apply all across each line.

TABLE Showing the QUOTIENTS of NUMBERS DIVIDED by 13.
ex Cotsworth's Direct Calculator "O"

13	0	100	200	300	400	500	600	700	800	900	1000
0	0000000000	1300000000	2600000000	3900000000	5200000000	6500000000	7800000000	9100000000	10400000000	11700000000	13000000000
1	0000000000	2600000000	5200000000	7800000000	10400000000	13000000000	15600000000	18200000000	20800000000	23400000000	26000000000
2	0000000000	3900000000	7800000000	11700000000	15600000000	19500000000	23400000000	27300000000	31200000000	35100000000	39000000000
3	0000000000	5200000000	10400000000	15600000000	20800000000	26000000000	31200000000	36400000000	41600000000	46800000000	52000000000
4	0000000000	6500000000	13000000000	19500000000	26000000000	32500000000	39000000000	45500000000	52000000000	58500000000	65000000000
5	0000000000	7800000000	15600000000	23400000000	31200000000	39000000000	46800000000	54600000000	62400000000	70200000000	78000000000
6	0000000000	9100000000	18200000000	27300000000	36400000000	45500000000	54600000000	63700000000	72800000000	81900000000	91000000000
7	0000000000	10400000000	20800000000	31200000000	41600000000	52000000000	62400000000	72800000000	83200000000	93600000000	104000000000
8	0000000000	11700000000	23400000000	35100000000	46800000000	58500000000	70200000000	81900000000	93600000000	105300000000	117000000000
9	0000000000	13000000000	26000000000	39000000000	52000000000	65000000000	78000000000	91000000000	104000000000	117000000000	130000000000

$$\begin{aligned}
 0.5-999 \times 13 &= 12,987 \\
 899 \times 13 &= 11,687 \\
 999.899 \times 13 &= 12,998,687
 \end{aligned}$$

$$\begin{aligned}
 \text{Per Year, Month.} \\
 0.5-100,000 \div 13 &= 7692.307692307692 \\
 &= 7692 \text{ per month.}
 \end{aligned}$$

For readjusting Salaries, Rents, etc., to the NEAREST CENT, in the Coinages (or measures) of all decimal-using nations. Applicable to Dollars, Francs, Marks, Pesos, Tachs, Yens, etc.

Copyrighted by M. R. Cotterworth, 1924

If cent values are required add from 1 to 100 in the 2nd column show more than 10 add 1 cent to that column's pre-decimal value, only when they are being used to derive the equivalent for values of cents.

TABLE for CONVERTING AT A GLANCE present 12 into future 12 MONTHLY PAYMENTS

No.	100	200	300	400	500	600	700	800	900	No. x 1,000
1.00	92.31	184.62	276.93	369.24	461.55	553.86	646.17	738.48	830.79	1,000
1.05	96.92	193.84	287.76	380.07	472.38	564.69	657.00	749.31	841.62	1,050
1.10	101.53	203.06	294.99	386.92	478.85	571.16	663.47	755.78	848.09	1,100
1.15	106.14	212.28	303.21	395.14	487.07	579.38	671.69	764.00	856.31	1,150
1.20	110.75	221.50	311.43	403.36	495.29	587.60	679.91	772.22	864.53	1,200
1.25	115.36	230.72	319.65	411.58	503.51	595.82	688.13	780.44	872.75	1,250
1.30	119.97	239.94	327.87	419.80	511.73	604.04	696.35	788.66	880.96	1,300
1.35	124.58	249.16	336.09	428.02	519.95	612.26	704.57	796.88	889.18	1,350
1.40	129.19	258.38	344.31	436.24	528.17	620.48	712.79	805.09	897.39	1,400
1.45	133.80	267.60	352.53	444.46	536.39	628.70	721.01	813.31	905.61	1,450
1.50	138.41	276.82	360.75	452.68	544.61	636.92	729.23	821.53	913.83	1,500
1.55	143.02	286.04	368.97	460.90	552.83	645.14	737.45	829.75	922.05	1,550
1.60	147.63	295.26	377.19	469.12	561.05	653.36	745.67	837.97	930.27	1,600
1.65	152.24	304.48	385.41	477.34	569.27	661.58	753.89	846.19	938.49	1,650
1.70	156.85	313.70	393.63	485.56	577.49	669.80	762.11	854.41	946.71	1,700
1.75	161.46	322.92	401.85	493.78	585.71	678.02	770.33	862.63	954.93	1,750
1.80	166.07	332.14	410.07	501.99	593.93	686.24	778.55	870.85	963.15	1,800
1.85	170.68	341.36	418.29	510.21	602.15	694.46	786.77	879.07	971.37	1,850
1.90	175.29	350.58	426.51	518.43	610.37	702.68	794.99	887.29	979.59	1,900
1.95	179.90	359.80	434.73	526.65	618.59	710.90	803.21	895.51	987.81	1,950
2.00	184.51	369.02	442.95	534.87	626.81	719.12	811.43	903.73	996.03	2,000
2.05	189.12	378.24	451.17	543.09	635.03	727.34	819.65	911.95	1,004.25	2,050
2.10	193.73	387.46	459.39	551.31	643.25	735.56	827.87	920.17	1,012.47	2,100
2.15	198.34	396.68	467.61	559.53	651.47	743.78	836.09	928.39	1,020.69	2,150
2.20	202.95	405.90	475.83	567.75	659.69	752.00	844.31	936.61	1,028.91	2,200
2.25	207.56	415.12	484.05	575.97	667.91	760.22	852.53	944.83	1,037.13	2,250
2.30	212.17	424.34	492.27	584.19	676.13	768.44	860.75	953.05	1,045.35	2,300
2.35	216.78	433.56	500.49	592.41	684.35	776.66	868.97	961.27	1,053.57	2,350
2.40	221.39	442.78	508.71	600.63	692.57	784.88	877.19	969.49	1,061.79	2,400
2.45	226.00	452.00	516.93	608.85	700.79	793.10	885.41	977.71	1,069.99	2,450
2.50	230.61	461.22	525.15	617.07	709.01	801.32	893.63	985.93	1,078.21	2,500
2.55	235.22	470.44	533.37	625.29	717.23	809.54	901.85	994.15	1,086.43	2,550
2.60	239.83	479.66	541.59	633.51	725.45	817.76	910.07	1,002.37	1,094.65	2,600
2.65	244.44	488.88	549.81	641.73	733.67	825.98	918.29	1,010.59	1,102.87	2,650
2.70	249.05	498.10	558.03	649.95	741.89	834.20	926.51	1,018.81	1,111.09	2,700
2.75	253.66	507.32	566.25	658.17	750.11	842.42	934.73	1,027.03	1,119.31	2,750
2.80	258.27	516.54	574.47	666.39	758.33	850.64	942.95	1,035.25	1,127.53	2,800
2.85	262.88	525.76	582.69	674.61	766.55	858.86	951.17	1,043.47	1,135.75	2,850
2.90	267.49	534.98	590.91	682.83	774.77	867.08	959.39	1,051.69	1,143.97	2,900
2.95	272.10	544.20	599.13	691.05	782.99	875.30	967.61	1,059.91	1,152.19	2,950
3.00	276.71	553.42	607.35	699.27	791.21	883.52	975.83	1,068.13	1,160.41	3,000
3.05	281.32	562.64	615.57	707.49	799.43	891.74	984.05	1,076.35	1,168.63	3,050
3.10	285.93	571.86	623.79	715.71	807.65	900.00	992.27	1,084.57	1,176.85	3,100
3.15	290.54	581.08	632.01	723.93	815.87	908.22	1,000.49	1,092.79	1,185.07	3,150
3.20	295.15	590.30	640.23	732.15	824.09	916.44	1,008.71	1,101.01	1,193.29	3,200
3.25	299.76	599.52	648.45	740.37	832.31	924.66	1,016.93	1,109.23	1,201.51	3,250
3.30	304.37	608.74	656.67	748.59	840.53	932.88	1,025.15	1,117.45	1,209.73	3,300
3.35	308.98	617.96	664.89	756.81	848.75	941.10	1,033.37	1,125.67	1,217.95	3,350
3.40	313.59	627.18	673.11	765.03	856.97	949.32	1,041.59	1,133.89	1,226.17	3,400
3.45	318.20	636.40	681.33	773.25	865.19	957.54	1,049.81	1,142.11	1,234.39	3,450
3.50	322.81	645.62	689.55	781.47	873.41	965.76	1,058.03	1,150.33	1,242.61	3,500
3.55	327.42	654.84	697.77	789.69	881.63	973.98	1,066.25	1,158.55	1,250.83	3,550
3.60	332.03	664.06	705.99	797.91	889.85	982.20	1,074.47	1,166.77	1,259.05	3,600
3.65	336.64	673.28	714.21	806.13	898.07	990.42	1,082.69	1,174.99	1,267.27	3,650
3.70	341.25	682.50	722.43	814.35	906.29	998.64	1,090.91	1,183.21	1,275.49	3,700
3.75	345.86	691.72	730.65	822.57	914.51	1,006.86	1,099.13	1,191.43	1,283.71	3,750
3.80	350.47	700.94	738.87	830.79	922.73	1,015.08	1,107.35	1,199.65	1,291.93	3,800
3.85	355.08	710.16	747.09	839.01	930.95	1,023.30	1,115.57	1,207.87	1,300.15	3,850
3.90	359.69	719.38	755.31	847.23	939.17	1,031.52	1,123.79	1,216.09	1,308.37	3,900
3.95	364.30	728.60	763.53	855.45	947.39	1,039.74	1,132.01	1,224.31	1,316.59	3,950
4.00	368.91	737.82	771.75	863.67	955.61	1,047.96	1,140.23	1,232.53	1,324.81	4,000
4.05	373.52	747.04	779.97	871.89	963.83	1,056.18	1,148.45	1,240.75	1,333.03	4,050
4.10	378.13	756.26	788.19	880.11	972.05	1,064.40	1,156.67	1,248.97	1,341.25	4,100
4.15	382.74	765.48	796.41	888.33	980.27	1,072.62	1,164.89	1,257.19	1,349.47	4,150
4.20	387.35	774.70	804.63	896.55	988.49	1,080.84	1,173.11	1,265.41	1,357.69	4,200
4.25	391.96	783.92	812.85	904.77	996.71	1,089.06	1,181.33	1,273.63	1,365.91	4,250
4.30	396.57	793.14	821.07	912.99	1,004.93	1,097.28	1,189.55	1,281.85	1,374.13	4,300
4.35	401.18	802.36	829.29	921.21	1,013.15	1,105.50	1,197.77	1,290.07	1,382.35	4,350
4.40	405.79	811.58	837.51	929.43	1,021.37	1,113.72	1,205.99	1,298.29	1,390.57	4,400
4.45	410.40	820.80	845.73	937.65	1,029.59	1,121.94	1,214.21	1,306.51	1,398.79	4,450
4.50	415.01	830.02	853.95	945.87	1,037.81	1,130.16	1,222.43	1,314.73	1,407.01	4,500
4.55	419.62	839.24	862.17	954.09	1,046.03	1,138.38	1,230.65	1,322.95	1,415.23	4,550
4.60	424.23	848.46	870.39	962.31	1,054.25	1,146.60	1,238.87	1,331.17	1,423.45	4,600
4.65	428.84	857.68	878.61	970.53	1,062.47	1,154.82	1,247.09	1,339.39	1,431.67	4,650
4.70	433.45	866.90	886.83	978.75	1,070.69	1,163.04	1,255.31	1,347.61	1,439.89	4,700
4.75	438.06	876.12	895.05	986.97	1,078.91	1,171.26	1,263.53	1,355.83	1,448.11	4,750
4.80	442.67	885.34	903.27	995.19	1,087.13	1,179.48	1,271.75	1,364.05	1,456.33	4,800
4.85	447.28	894.56	911.49	1,003.41	1,095.35	1,187.70	1,279.97	1,372.27	1,464.55	4,850
4.90	451.89	903.78	919.71	1,011.63	1,103.57	1,195.92	1,288.19	1,380.49	1,472.77	4,900
4.95	456.50	913.00	927.93	1,019.85	1,111.79	1,204.14	1,296.41	1,388.71	1,480.99	4,950
5.00	461.11	922.22	936.15	1,028.07	1,120.01	1,212.36	1,304.63	1,396.93	1,489.21	5,000
5.05	465.72	931.44	944.37	1,036.29	1,128.23	1,220.58	1,312.85	1,405.15	1,497.43	5,050
5.10	470.33	940.66	952.59	1,044.51	1,136.45	1,228.80	1,321.07	1,413.37	1,505.65	5,100
5.15	474.94	949.88	960.81	1,052.73	1,144.67	1,237.02	1,329.29	1,421.59	1,513.87	5,150
5.20	479.55	959.10	969.03	1,060.95	1,152.89	1,245.24	1,337.51	1,429.81	1,522.09	5,200
5.25	484.16	968.32	977.25	1,069.17	1,161.11	1,253.46	1,345.73	1,438.03	1,530.31	5,250
5.30	488.77	977.54	985.47	1,077.39	1,169.33	1,261.68	1,353.95	1,446.25	1,538.53	5,300
5.35	493.38	986.76	993.69	1,085.61	1,177.55	1,269.90	1,362.17	1,454.47	1,546.75	5,350
5.40	497.99	995.98	1,001.91	1,093.83	1,185.77	1,278.12	1,370.39	1,462.69	1,554.97	5,400
5.45	502.60	1,005.20	1,010.13	1,102.05	1,193.99	1,286.34	1,378.61	1,470.91	1,563.19	5,450
5.50	507.21	1,014.42	1,018.35	1,110.27	1,202.21	1,294.56	1,386.83	1,479.13	1,571.41	5,500
5.55	511.82	1,023.64	1,026.57	1,118.49	1,210.43	1,302.78	1,395.05	1,487.35	1,579.63	5,550
5.60	516.43	1,032.86	1,034.79	1,126.71	1,2					

1,000	932.08
2,000	1,846.15
3,000	2,769.23
4,000	3,692.31
5,000	4,615.38
6,000	5,538.46
7,000	6,461.54
8,000	7,384.62
9,000	8,307.69
10,000	9,230.77
11,000	10,153.85
12,000	11,076.92
13,000	12,000.00
14,000	12,923.08
15,000	13,846.15
16,000	14,769.23
17,000	15,692.31
18,000	16,615.38
19,000	17,538.46
20,000	18,461.54
21,000	19,384.62
22,000	20,307.69
23,000	21,230.77
24,000	22,153.85
25,000	23,076.92
26,000	24,000.00
27,000	24,923.08
28,000	25,846.15
29,000	26,769.23
30,000	27,692.31
31,000	28,615.38
32,000	29,538.46
33,000	30,461.54
34,000	31,384.62
35,000	32,307.69
36,000	33,230.77
37,000	34,153.85
38,000	35,076.92
39,000	36,000.00
40,000	36,923.08
41,000	37,846.15
42,000	38,769.23
43,000	39,692.31
44,000	40,615.38
45,000	41,538.46
46,000	42,461.54
47,000	43,384.62
48,000	44,307.69
49,000	45,230.77
50,000	46,153.85
51,000	47,076.92
52,000	48,000.00
53,000	48,923.08
54,000	49,846.15
55,000	50,769.23
56,000	51,692.31
57,000	52,615.38
58,000	53,538.46
59,000	54,461.54
60,000	55,384.62
61,000	56,307.69
62,000	57,230.77
63,000	58,153.85
64,000	59,076.92
65,000	60,000.00
66,000	60,923.08
67,000	61,846.15
68,000	62,769.23
69,000	63,692.31
70,000	64,615.38
71,000	65,538.46
72,000	66,461.54
73,000	67,384.62
74,000	68,307.69
75,000	69,230.77
76,000	70,153.85
77,000	71,076.92
78,000	72,000.00
79,000	72,923.08
80,000	73,846.15
81,000	74,769.23
82,000	75,692.31
83,000	76,615.38
84,000	77,538.46
85,000	78,461.54
86,000	79,384.62
87,000	80,307.69
88,000	81,230.77
89,000	82,153.85
90,000	83,076.92
91,000	84,000.00
92,000	84,923.08
93,000	85,846.15
94,000	86,769.23
95,000	87,692.31
96,000	88,615.38
97,000	89,538.46
98,000	90,461.54
99,000	91,384.62
100,000	92,307.69

CONFUSION now caused by DIFFERENT, CHANGING CALENDARS

91

All the various calendar systems used all over the world needlessly change week-day names for all the 365 days each year, because the now universal week of seven days was not adopted by Europeans until about 350 years after Augustus Caesar arbitrarily fixed the lengths of our months, quarters and half years so unequally that Europeans have never been able to form a definite equal monthly measure of time, consequently our months are inconsistent with our weeks. Yet we work and pay salaries, rents, accounts, etc. by erratic months 28 to 31 days long—inconveniently differing 21 per cent.

We need a permanent monthly measure of four complete weeks for business and social convenience to evenly quarter all months alike, because future time records of trading, work, appointments, etc. beyond the day are generally dependent upon whether the day of the week affixed to the required date in any month happens to be Sunday or another week-day. We are therefore always forced every day to consider how following days of the month are going to be affected by their shifting week-day names. That causes needless trouble and inconvenience when making arrangements for the future, necessitates the postponement of national festivities, holidays, fairs, markets and other anniversaries from their true day registers each year.

These and other anomalies inflicted upon us by our shifting calendars were so constantly brought to the writer's notice by the incessant references required to printed calendars, that he invented the separation of the "Skip-day" and Leap-day to secure the return of each week-day name to its four fixed weekly positions in every month, as shown on the watch and clock faces inside the covers hereof, to win for humanity the many every-day conveniences we can gain by having all week-day names permanently fixed for all nations as they recur in future years, by simply inserting a new month of four weeks between June and July, to derive the many world-wide advantages we can afterwards enjoy by thenceforward using the perpetual "Yearal" as registered on Table D.

The need for this simplification of our calendar to bring other calendar nations to unite in forming it into the easiest possible international calendar is exemplified by the following:

CAIRO, July 3.—One of the subjects which recently came up for discussion at the International Congress of Chambers of Commerce—the question of a fixed Easter and the reform of the calendar—is of particular interest to Egypt for two reasons. Firstly, it was the Bishops of Alexandria, who, acting on the orders of the Nicene Council, decided every year the date on which Easter was to be celebrated, and who always sent out delegates to announce the date to the world.

It is, also, not generally known that the use of no fewer than five calendars is imposed on the inhabitants of Egypt—the Moslem, the Coptic, the Hebrew, the Julian and the Gregorian. A unification of these calendars, or some workable arrangement, has been proposed many times, for the complications and dilemmas which are caused by their existence are endless.

Of course, some difficulty would be found in bringing the Moslem and Jewish calendars into line. It is high time something was done to simplify the calendars. Business houses, especially banks, would welcome such an innovation, and would heartily support any movement having this reform for its object, for not only does the multiplication of religious holidays hinder business relations between Egypt and the rest of the world, but it is highly detrimental to the carrying on of business locally.

Business men visiting Egypt encounter considerable annoyance from the fact that the Egyptian government keeps to the Moslem calendar and naturally celebrates its feasts, for some of which it is closed for several days, in addition to suspending work on Fridays. It takes one a very long time to become accustomed to this closing on the sixth day of the week, and even we, old residents, are continually finding ourselves brought up against a brick wall, because in making arrangements to carry out some little piece of business we have omitted to take the Moslem calendar into account.

But the worst impediment is met with in the large financial and other establishments, which are forced to close their doors on the principal feasts of each of the five calendars. It is a unique case of the employee dictating to the employer—ideal for the employee who thus gets a long list of extra holidays. The reason for this forced regulation is, that as the presence of adherents of all the Eastern faiths is absolutely indispensable to every establishment in Egypt, all work would otherwise come to a standstill, as the employees would simply not put in an appearance. So the European business houses bow before the inevitable.

To have to keep an eye on the dates of the movable feasts is bad enough in countries using only the Gregorian calendar, but to have to keep five calendars going and always take into account the faith of the man, or men, with whom you are dealing in order to be certain that one's business arrangements will not encounter some unexpected hitch, is simply too great a strain.—*Pall Mall Gazette*, July 18th, 1910.

The complications and inconveniences which thus arise are incessant, and nothing but custom and an apparently universal ignorance of the extremely simple way in which these inconveniences can be obviated could possibly account for the apparent contentment with which they have been so long accepted.—*Alan Philip, L.L.B., J. P. Brechin.*

CHAMBERS of COMMERCE in EVERY NATION UNANIMOUSLY PRESSING THEIR GOVERNMENTS to UNITE in ADOPTING THE INTERNATIONAL CALENDAR

The CHAMBERS OF COMMERCE of the BRITISH EMPIRE, assembled in London 11th June, 1912, unanimously passed the following resolution, which the president (Lord Desborough) submitted thus:

"That in the opinion of this Congress it is desirable to establish by international agreement a fixed date for Easter, and to approach the various Governments of the Empire, with a view to summoning a diplomatic official conference with the object of establishing a fixed international calendar."

"The resolution, he said, was one in favor of having a fixed date for Easter and for summoning the various countries of the world to meet for the purpose of introducing a reformed calendar which was very much needed. The resolution had been placed first on the programme because it had already been passed by business men at a great many congresses. It had been unanimously passed after a long debate of three hours at a meeting of the International Chambers of Commerce of the whole world.

"It had been passed by the London Chamber of Commerce, and also at the last meeting of the Association of Chambers of Commerce of the United Kingdom; and he hoped that the present Congress would follow the example which had already been set. He might give one or two reasons for doing so.

"He had received an enormous number of letters from men of business, from the Bar, from schools, from Chambers of Commerce and members of the Stock Exchange, pointing out the great disturbance occurring to business generally, and to scholastic and law terms, from Easter being a date that *hopped about*, and which only the most learned people could hope to be able fairly to tell the date of within a week or two after a long study of the initial pages of the Prayer Book.

"The present manner of fixing Easter was not right historically, astronomically, geographically, or from any other point of view. The present method, he believed, was laid down three centuries before the Christian era by a certain gentleman called Meton. But times had progressed since then. It was also adopted by Julius Caesar, who was so dead that he had even become proverbially dead—(laughter)—and it was crystallized by Pope Gregory who died in 1585.

"He could not understand why the whole year from a business point of view should be upset because a gentleman three hundred years before Christ had made those calculations, and he felt sure that as business men they must think that that, at all events, was a subject which was worthy of some international re-consideration. The festival itself, celebrating the Goddess of Spring, was mainly Jewish in its origin, and was calculated on a very unscientific basis.

"If the Congress passed the resolution they would be in good company, inasmuch as the German Reichstag had passed a resolution in favor of fixing Easter and of calendar reform unanimously, he believed, on more than one occasion. The Swiss Government, too, as was well known, were longing to call a conference on the subject, and he understood that they were waiting for Great Britain and the Empire to move in the matter."

"Convocation, too, had already appointed a committee to inquire into it, and the Council of the Vatican and the Synods of Russia, Armenia, Servia, and Greece had sympathetically considered the subject. The Swiss Reformed Church had also expressed its approval of it. Canada had already taken up the matter, and Sir Sanford Fleming and others had expressed their views on the subject.

"He ventured to submit to that great Congress that from every point of view, even from a religious point of view, it would be most advantageous to make the great festival of Easter more in conformity with real traditions and real dates.

"There was no more reason why Easter should hop about than Christmas; in fact, it disturbed the year much more than if Christmas hopped about, because on Easter depended Lent and the great Whitsuntide holidays, and business men, especially those connected with trade, had told him that it was most upsetting to have an uncertain holiday of this magnitude coming in the middle of the business year, and they as well as all other learned and business professions would certainly welcome a conference of the nations of the world which would reform the calendar and fix the date for Easter within simple and reasonable limits." (Cheers.)

The INTERNATIONAL CONGRESS of CHAMBERS of COMMERCE and COMMERCIAL and INDUSTRIAL ASSOCIATIONS assembled at BOSTON, U.S.A., on September 25th, 1912, UNANIMOUSLY passed the following RESOLUTION:

"The Congress renews the Resolution which it passed at the preceding session in London in 1910, in favor of the Establishment of a Fixed date for Easter and of a uniform Calendar."

The three unanimous Resolutions were:

1. It is desirable to establish a Fixed International Calendar.
2. It is desirable to establish by International Agreement a Fixed Date for Easter.

3. The Congress instructs the Permanent Committee to invite one of the Governments to convoke a Diplomatic Official Conference with the object of establishing a Fixed Date for Easter and a Fixed International Calendar.
- There was an entirely harmonious discussion, from which the following parts are reprinted as being of special interest:

M. Louis Canon-Legrand (President), from Mons, Belgium, said:

"In 1907 the variability of Easter, which can extend 35 days, was discussed by us.—Considerable inconvenience is occasioned in Commercial Life, in the School Sessions, &c.—If Easter falls in March, it causes a Ruined Season in certain industries."

"At the Congress of London, two years ago, this question was discussed thoroughly, as well as that of the desired uniformity of the Calendar."

"It is essential to have in the Calendar an exact number of weeks.—It therefore becomes necessary to suppress one day of the 365.—For Banks and Financial Houses it is important that all months should end on the same day."

"The London Congress, therefore, expressed the opinion that it would be desirable to arrange for the establishment of a Fixed International Calendar."

Mr. F. Faithful Begg (Chairman of the London Chamber of Commerce) said:

"The London Chamber of Commerce, ever since it was instructed in the merits of this controversy by your respected President some time ago, has been enthusiastically in favor of the reforms which he so eloquently advocates."

"There are two questions involved, two questions of very great importance. One is the regularization of the date of Easter, and there is the question of the adoption of a new calendar system. Now I shall not detain you more than a very few minutes, but I should like to say a few words upon each of these subjects."

"Probably here in the United States you may not have appreciated the difficulties which arise in connection with the variable date upon which Easter falls. These difficulties are well explained in the com-

munication of the President, and I do not propose to enter into them at all."

"What I wish to point out more particularly to those who have not perhaps profoundly studied this subject, is that there is no reason whatever why you should have a variable date for Easter. It is an old arrangement, into the reasons for which I will not enter, but if we would only be content to regulate Easter by the sun instead of regulating the date by the moon, we should get to a point where we might have annually a fixed date for Easter."

"That seems a very simple matter, but it is by no means so simple; and it is satisfactory to know that, looking at the difficulties from an international point of view, this Congress has already been able to interest the various governments in Europe in the question, and I think we may fully hope that in a short time a satisfactory result will be brought about."

"One point I desire to mention in connection with both questions: I will state that my own Chamber is in favor, but I wish to draw your special attention to a paragraph in the President's communication toward the close, where he mentions that the seventh Congress of Chambers of Commerce of the British Empire, meeting last June, passed unanimously a favorable resolution. (See top of page 22.)"

"I wish to point out to you that that represents the combined wisdom, if I may use the word 'wisdom,' of the Chambers of Commerce of the British Empire, a new organization which has been brought into existence quite recently which met the other day in London and which contained in its membership representative men from all parts of the British Empire."

"Now, gentlemen, with your permission I should like to say one word about the calendar. I am not going to discuss the

International Chambers of Commerce Advocate the Reform

"calendar, because again, the President has provided us with full information with regard to what it is proposed should be done in that connection, but I wish to mention for a special reason a fact which I think is perhaps not well known to every one in this room, and it is this: That there is here, on the American continent, proof that before America was discovered by Columbus there existed on these shores a system for the most accurate adjustment of civil and solar time, and a system which was superior in its method to that in use in Europe in the days of Columbus, and to the calendar year under which we regulate our affairs today, by the calendar of the Pope Gregory.

"You may see for yourselves, if you choose to visit the place, the calendar stone of the Aztecs of Mexico. It exists in the form of a sun-stone, twelve feet in diameter, sculptured with great dexterity and fineness, and this stone is both a sundial and a calendar similar to that which was used by the Egyptians and the Chaldeans in time long gone by. By means of this stone the Mexican priests determined not only the time of day, but they determined the solstices, and they kept accounts of years and of days. On the face of the stone there are inscriptions including the division of the year into weeks and into days, and the extraordinary thing is that that stone includes also the computation of centuries, with greater exactness, as I have said, than that of the modern Gregorian calendar.

"The error, and those of you who understand the error in the calendar will appreciate the force of this point, is equivalent to only one day in thousands of years. (Applause.)

"This stone is supposed to have been made in the year 1479 of our Lord; but the science upon which it is based must have taken enormous periods to evolve, wherever that science came from, whether it was European or native born. How that stone came into existence nobody has been able to determine; but there it is.

"My idea is that this stone should be brought into play in connection with the proposal for the reform of the calendar, and at all events that the system in existence, as I have said, in this country before the discovery of the country by Columbus should have a show in the negotiations which are going on in connection with the reform of the calendar." (Applause.)

Herr Ernst Krauss (Vice-President), from Vienna, said:

"The members of the Chamber of Commerce, whom I have the honor of representing, are entirely conformable with everything that is going to be decided in that respect."

All important factors in Vienna have agreed that Easter holidays should be set for a definite date and that a Uniform Calendar should be introduced for the entire world.

Mr. Alfred Aslett (General Manager, Funness Railway, England) said:

"There are two competitive proposals (compared as B and E on Table C), the one by Professor Grosclaude, of Switzerland, and the other by Mr. John C. Robertson, of Kircaldy, Scotland, the latter of which two he preferred."

President M. Louis Canon-Legrand in conclusion referred to the question then being in the hands of the Swiss Government.

"As regards the religious question.—It is obvious that what we are asking does not go against any religious conviction; we respect all convictions; but we hold that ALL religions are interested to have a Uniform Calendar and can so arrange it." (See page 88 re Ecclesiastical Authorities.)

NOTES appended by M. B. Cotsworth
Mr. F. Faithful Begg's statement that the Ancient Mexican (Aztec) Calendar system was truer than the European Calendar is correct. Further, it was much more convenient, because all its MONTHS WERE EQUAL, consisting of 4 WEEKS of 5 DAYS each, which exactly quartered every month, vide p. 40, and End-plate IV. That week of 5 days, with every 5th day as Sunday or "Rest-Day," would require 18 of such months of 20 days, plus a "non-month week" to follow the 18th month, to complete the Ancient Mexican Year.

Theirs was the most convenient of all Calendars. But its re-establishment as a world-wide Calendar seems impracticable now that the Week-of-7-days is universal.

Humanity may attain to that hundreds of years hence; but as we are concerned about the best Calendar we can get into universal use now, we must utilize the 7-day week which now regulates the affairs of all Nations, as Don Carlos Hesse, the South American Astronomer and Calendar Reformer at Iquique, Chili, so ably points out concerning the necessity of weeks being used to quarter-months, as can only now be done by using months exactly 4 weeks long. To attempt weeks-of-5-days now, would postpone Calendar Reform many generations.

WELL, UNCLE, WE'VE GOT
"RECIPROCITY" IN MONTHS
ANY-HOW!
BUT CAN YOU TELL ME
WHAT A MONTH REALLY IS!

WAL, I GUESS
FEB HAS 28,
SOMETIMES 29,
APRIL, JUNE } 30
SEP "NOV }
OTHERS 31.
ONLY 1% DIFF-
ERENCE, AND
THEY'RE ALWAYS
CHANGING
DAY-
NAMES.



COPYRIGHT 1911 BY
M & COTSWORTH

Why should Day-names continue to be shifted throughout every month and year, when we can most easily **FIX** them to gain greater daily convenience? We can easily arrange **EVERY MONTH** better by permanently inserting between June and July, the model month of 4 weeks, like February, 1914, which experience has proved is the best. The **MONTH** is the **LONGEST UNIT** by which people **WORK** and **PAY** for **LABOR**—that **MOST USEFUL** of all **COMMODITIES**—throughout **NORTH** and **SOUTH AMERICA**, **ASIA** and **AFRICA**. Much labor in Europe is also paid by the month. Throughout the world monthly payments for Rents, Accounts, etc., are made many millions of times each month. **YET, WE NEED A MONTHLY MEASURE**, and also **FIXED DAY NAMES** uniformly applicable to **ALL MONTHS**. The United States and Canada can best unitedly invite all nations to consider the advantages of the proposed "**Skip-day**" and **Model Month** to fix all day-names in Months and Years, and arrange a permanently Fixed International Calendar.

Now that these two friendliest of nations are about to celebrate the 100 years of peace—during which neither side of their International Boundary (the longest in the world) has been patrolled by an armed soldier—we ask their Governments to unite in issuing the International Invitations to carry into effect this easy Reform to benefit all nations, and advance the welfare of humanity.

94

WHY the INTERNATIONAL CONFERENCE should ASSEMBLE in AMERICA

The important fact that many millions of typical people from almost all nations have mutually "settled" in North and South America, where races of every color and creed have intuitively adopted the Gregorian Calendar of Western Europe, with its Sundays and Weekdays differing from those which East European, Asiatic and African immigrants formerly used through other Calendars, indicates the advisability of requesting the American Governments to invite and assemble the to be officially selected Representatives of all Nations, for the final Conference or Congress to Reform the Calendar.

IN NORTH and SOUTH AMERICA people from EVERY NATION READILY UNITE in the EUROPEAN SUNDAY'S REST—WHETHER DAYS or HOURS DIFFERENT from their HOMELAND SUNDAYS—AND ALL ARE BENEFITED BY THAT UNITY UNDER ONE (GREGORIAN) CALENDAR NOW PREVAILING THROUGHOUT NORTH, CENTRAL and SOUTH AMERICA.

The International Reform League consider that the initiative might most appropriately be taken jointly by the President of the United States and the Governor-General of Canada (with the consent of the British Government) at the forthcoming celebration, in December, 1914, of their 100 years of peace—during which no soldier on either side has been called upon to patrol any of their 4,000 miles of International Frontier.

On page 449 of "The Rational Almanak" nearly 10 years ago, I indicated that unless European Authorities took decisive action, the President of the United States would be requested to call the Official Conference of Representatives from all Nations, as it is now proposed to do; 1st, because of the pre-eminent impartiality with which the American Nations collectively can approach all other nations and all Churches on this question, and 2nd, because the United States pre-eminently exceed all other American Nations in influence and power to facilitate this highly desirable Reform.

The bitterness aroused by wars between the Nations of Europe causes International difficulties which can best be overcome by assembling the Conference on neutral territory in Central America, where Panama is the most accessible, at the gateway of that great channel of International commerce—the Panama Canal.

As Canada and the United States together, about 40 years ago, similarly established the world-wide "Standard Time" for the benefit of all nations, they can in like

manner most readily expedite the assemblage and work of the Conference to Reform the Calendar, especially as the Government of Canada have unanimously endorsed these proposals, which His Royal Highness the Duke of Connaught, the Governor-General, has at the Government's request transmitted to the Imperial British Government recommending their adoption.

This League suggests that President Wilson with the Governor-General of Canada, on behalf of their respective Governments, unite in issuing invitations to all nations to meet on some such neutral ground as Egypt, or Panama (after the canal is opened) to devise and bring into International use the best form of Calendar which the united wisdom of all nations can arrange for mutual benefit.

It may be possible for President Wilson to open that Conference during his visit to Panama, after opening the canal in March, 1915.

The British Government will surely encourage Canada to take that step in order that the vigorous and prospering daughter nations of Australia, New Zealand, South Africa; with India, Egypt and other dependencies; may rightly gain reasonable representation, along with European nations, and also the great nations of China and Japan, who with the growing populations of Siberia, Central Asia and Africa are interested in this Reform, which will daily facilitate convenience throughout every home and business in every nation.

As advocates of this proposed Reform of the Calendar have requested that more particulars be recorded concerning the origin of this 20th Century Reform, the following excerpts are reprinted from the 1908 to 1909 Transactions of the Royal Society of Canada, with the addition of the unquoted paragraphs inserted anent the European publication of Mr. Cotsworth's original proposals through Switzerland during the year 1905.

(Prefatory Note.—Mr. Cotsworth was introduced to the Section by Sir Sandford Fleming, K.C.M.G., who spoke of him as a gentleman who had given prolonged attention to the subject—one of universal importance—which he was about to discuss. Sir Sandford proceeded to make a few remarks on the general subject of "A Reformed Calendar." It has been thought desirable to prefix his observations to Mr. Cotsworth's paper.)

97

SIR SANDFORD FLEMING'S ADDRESS to the ROYAL SOCIETY of CANADA

"The calendar of days, weeks and months, which we have inherited from past ages, is found in many quarters to be inadequate for our modern requirements, especially in many branches of industrial life, in business operations and various spheres of human activity; it is especially felt by railway and other transportation companies. The defects of the calendar are borne with equanimity by the community generally, apparently under the belief that no change can be made; that the months, for example, varying in length from 28 to 31 days, are fixed by some natural law and as unalterable as the motion of the heavenly bodies. There are a few persons, however, who begin to see the matter in a different light. A spokesman in favor of some change and improvement has recently been heard in the Parliament of the United Kingdom. I hold in my hand a proposal for a simplified calendar by Mr. Alexander Philip, of Brechin, in Scotland, and we have here with us today a gentleman from the City of York, England, who has given the subject prolonged consideration. For myself I warmly approve of the movement to simplify the calendar, and my earnest desire is to see the Royal Society of Canada take a leading part in promoting a needed change—a change which would benefit the great human family for all future time.

"That such a change can be effected I have no doubt whatever, provided we take the right course, and the right course to follow is to begin by seeking the proper means of gaining the assent of all interested in the proposal.

"The question arises: Who are interested? and the answer is, everybody—all civilized nations are concerned in any proposition to modify the calendar of days and months which has come down to us through the centuries.

"Members of the Royal Society will remember a cognate case which presented itself on this continent thirty or forty years ago. The development of the railway system of this country was the direct means of forcing the matter on our attention. The establishment of the Canadian railways, extending from the Maritime Provinces westerly towards the Pacific, brought to light difficulties in reckoning time. It was discovered that generally speaking every town and city had its own standard by which the hours of the day were reckoned. It was found that there were nearly a dozen standards of time between Halifax and Sarnia, and there was every prospect, in the absence of a proper system, of having eventually nearly a hundred standards between the Atlantic and the Pacific. This was suggestive of confusion, and worse than confusion, in operating the railway system of the future.

"Among the records of the Royal Society will be found a detailed account of the means taken to avert these evils. A scheme was evolved, and not only Canada and the American Continent, but all countries on the face of the globe were benefited by the establishment of 'Standard Time.'

"In May, 1870, the matter was brought to the attention of the Marquis of Lorne, then Governor-General of Canada, by a memorial from the Canadian Institute, Toronto. His Excellency took means to bring the question to the notice of Her Majesty's official and scientific authorities in London, and through the home government the attention of foreign governments was directed to the subject.

"This was the first practical step taken, and the world is more indebted than it knows to the representative of the Queen in this Dominion—to the same British nobleman who, a few years afterwards, became the founder of the Royal Society of Canada. This step led eventually to an International Conference being held at Washington from which, as a direct outcome, the meridians of the globe were standardized, and the reckoning of the hours of the day simplified by having one definite standard for the world.

"I venture to think that the question of simplifying the almanak can be dealt with similarly. I see every reason for memorializing the Governor-General on the subject, in the hope that His Excellency may take the first practical step in a movement of such general and wide importance. May we not be justified in the expectation that in due time an international conference may be assembled, possibly in Ottawa, to consider the matter? and that, as a result, all civilized nations will have a simplified and greatly improved calendar for their common use and benefit in reckoning the days, the weeks, and the months throughout each and every year.

"SANDFORD FLEMING."

ORIGIN of the PROPOSED REFORM

(Excerpts from M. B. Newworth's Paper read before the Royal Society of Canada)

"The world-wide need for reform of our calendars has yearly engrossed me the more its everyday value to us all was ascertained by investigation, travel, discussion, and correspondence during the exceptional opportunities provided by professional work on both sides of the Atlantic, in expert business methods to avoid waste labor.

"The waste directly caused by our unequal months was evidenced early during my twenty-five years of statistical work, abstracting the weekly, monthly and yearly earnings, etc., for the railway company carrying the largest tonnage in the world, who are also the largest dock owners in the world.

"In non-leap-years all the twenty-eight days of February, being repeated during the first twenty-eight days of March, with the same week-day names to the respective dates, made all statistical comparisons easy and exact between these two periods, but then only. The regular weekly sailings of the continental and coasting steamers fitted both periods in the current and preceding non-leap-years.

"Everything in earnings and expenditure was then on the same time basis, as, although the preceding year began a day earlier in the week, there were four constant periods of four weeks each. That enabled us to ascertain the cost of working with less labor, and, further, we gained greater accuracy. *We were thus able to get home earlier and happier, without working unpaid overtime.*

"Being desirous of doing so every month, my attention was directed to the loss and anomalies developed by our imperfect calendar system. Whilst investigating the origin of our anomalous months and the shifting weeks therein, the easy 'Skip-day' way was disclosed by which all needless calendar troubles can be avoided.

"Noticing that as business became more exacting in accelerated ratio each following year, the chief officers required more precise explanations of the differences in the cost of handling the traffic each successive month, to avoid waste and increase efficiency; the extra trouble was so generally caused by the needless variations of our calendar (especially after the moon-wandering of Easter began), that the child-born assumption as to the calendar

system of our ancestors being best, gradually vanished, as the extent of our calendar-created inconveniences, difficulties and waste of labor forced on governments, railway and canal companies, shipowners, manufacturers, traders and workers became evident.

"The crude and imperfect system of having twenty-eight to thirty-one day months fixed nearly two thousand years ago by the Caesars, sufficed when the work of the world was done by unpaid slaves; but the freedom and enterprise won since then have developed new conditions needing better calendar facilities. The exclusive barriers of nations have been broken down and interchange of trade is universal, necessitating duplicate dates by buyers and sellers where different calendars exist.

"Few persons realize that the one-third of Europe's population (in Russia, Turkey, Roumania, Greece, etc.) trade with us in duplicate dates, involving interest calculations and legal difficulties. The introduction of steamships, railways, telegraphs, cables, telephones and modern business and social methods have very extensively changed our calendar requirements for equal months, and the same fixed week-day-names throughout every month and year.

"The business and social inconvenience evidenced during the Christmas weeks of 1894 and 1895 (when Christmas Day came in the middle of the week) disturbed regular ideas of the week. Market-days and weekly appointments had to be altered, causing trouble, confusion, expense and disappointments.

"Noticing the heart-burning caused to shop-assistants and other toilers, whose cherished Christmas family re-unions were curtailed to get them back for Friday and Saturday's business (because they could not link up the nearest week-end with the holidays), brought the idea to my mind that as Christmas Day was kept like Sunday, the boon of a permanent calendar with FIXED Holidays always extended over the week-end without splitting the week, might be secured if we simply kept its name as 'Christmas Day,' and relieved it from being enumerated as a day of the week—a 'Dies-non' inserted as a public holiday between Saturday and Sunday.

CALENDAR REFORM DESIRABLE and PRACTICABLE

"Further, I saw that by similarly giving "Leap-day" its proper name and letting it "leap the week-day name as a 'Dies-non' "and public holiday (rightly due to salaried "servants who work that day for nothing), "we might by relieving those exceptional "year days from being regarded as days "of the week, permanently win the many "increased facilities and benefits which the "easiest possible working month of four "weeks would always bring by ending on "Saturday—and establish the easiest possible permanent calendar. Thus the golden "key to solve our calendar difficulties and "perfect the calendar appeared to be found "in the FIXING of 'Skip-day,' Easter, and "simpler months. These form the essential "features of the various proposals which "have since been made to improve our yearly "register of time.

"The worst source of the mischief in "changing the week-day names through all "the dates in each year and separating "Christmas, New Year's Day and other "holidays from the week-ends, was then "located in the odd 365th day beyond the "fifty-two weeks of the year, and our "UNEQUAL MONTHS.

"Having arrived at the conclusion that "reform was highly desirable, the next consideration was to ascertain what was "practicable.

"That led to the submission of those suggested remedies to the late Dr. Gott, the "Bishop of Truro (England), to whom I "also explained in 1898 the advantages of "fixing Easter, having known him well in "Leeds. He considered 'they would benefit "the entire human race,' and cordially encouraged me to work for the reform, as "also did the Dean of York, Cardinal "Stonor (whom I was privileged to meet "in Rome), Dr. Tempest Anderson, of "York, and many others. My proposals of "1899 were then published.

"Knowing that progressive reform would "be more quickly taken up by the free, untrammelled minds of Americans, I visited "the United States in 1903, and was highly "pleased when President Hadley, of Yale "University, told me that he thought the "month of four weeks 'would come as a "commercial necessity.' Prof. Geo. F. "Wright, D.D., and others said the reform "would surely be accomplished in reasonable "time if tactfully worked out—whilst "prominent bankers and business men "agreed that it was highly desirable and "practicable. Indeed, the United States

"Trust Co. and other bankers had, by "printed interest cards, etc., already begun "to charge interest every four weeks, and "the U. S. A. comparative table of working "days in each month (as reproduced on page "35 of my 'Rational Almanak') was in "regular use in the leading offices.

"The governments, railway companies "and other large employers had, through "changing days and unequal months, long "been burdened with vast numbers of "monthly calculations to apportion yearly "salaries, rents, etc., to the varying number "of work-days in each month, to ascertain "truer costs as against monthly revenue, "traffic, sales, etc. They had elaborate "tables printed and some offered to pay for "shorter methods of calculation to meet "their increasing needs, as my publications "to economise such work were widely "known, especially the *Direct Calculator* O.

"That experience in America was emphasized when the four-week (28 days) system was found to have spread to the "British and German iron and steel trades, "steamship companies, etc., whilst all nations were feeling the increasing need for "equal monthly periods of service and pay, "as instanced by the Belgian Government "having to adopt the four weekly period for "the employers' and employees' contributions to provide the best designed pension "system for old age.

"Then, feeling that the time had arrived "to more publicly advocate the reform, my "book on 'The Rational Almanak' was published in 1905.

"Since that time increasing interest has "been aroused by the advocacy for reform "in both Europe and America. The celebrated French astronomer, Camille Flammarion, with others in Germany, Belgium, "Switzerland and other nations, have joined "with Lord Avebury, Sir Norman Lockyer, "Sir Oliver Lodge, Mr. Alex. Philip, Mr. "John C. Robertson and other British advocates, in urging for improvement.

"Sir Sandford Fleming, who is so widely "known for his valuable experience in the "establishment of International 'Standard "Time,' has personally told you 'that the "desired change can be effected I have no "doubt whatever.' Such testimonies commend the subject to your consideration. "Now he has pointed out the right course "to take by inducing the respective Governments to call the Official International "Conference."

100 The GOVERNMENT of CANADA ENDORSES the proposed "YEARAL"

The following is of interest as showing the progress being made towards the reform of the present calendar system:

Excerpt from the Transactions of the Royal Society of Canada, May, 1908:

The Secretary of Section III. reports that the following resolution has been adopted unanimously by the Section:

"Section III. recommends that the Council be instructed to memorialize the Governor-General on the subject of the Reform of the Almanac, asking His Excellency to bring the need of a new calendar to the attention of the Imperial Government with the view of steps being taken to obtain the assent of all civilized nations thereto."

The motion being put to the society, was carried unanimously.

The 1913 annual meeting of the Royal Society of Canada passed the following as their second resolution:

"Resolved that Mr. M. B. Cotworth's proposal for the reform of the calendar receive the consideration of the society."

Ottawa, June 7, 1912.

Dear Mr. Cotworth—

At last I can congratulate you on progress having actually been made in the reform you have so long fathered and advocated.

Half an hour ago I left the Premier's office, when the full Council of the Royal Society met him by appointment. I enclose with this the deliverance which was read to him. That, with the portion of the transactions of the Royal Society which was published in pamphlet form, goes to the office of the Governor-General and from there by His Royal Highness to the Home authorities to distribute among the several governments, as was done in the matter of "Standard Time." In this way all civilized nations will have the matter before them and in due time an International Conference will be expected to deal with the subject.

I can do no more at present and it remains for me to congratulate you on being the father of the reform which will be of much benefit to the human family in the future years of the world.

The matter is now in a fair way of settlement by an International Conference.

Yours most truly,

SANFORD FLEMING

Copy of petition from the Royal Society of Canada to His Royal Highness the Governor-General in Council.

Ottawa, June 6, 1912.

The undersigned has the honor to state that in pursuance of a resolution adopted at the last annual meeting of the Royal Society of Canada, held in the month of May last, the Council of the Society would respectively beg leave to represent to Your Royal Highness in Council that the subject of the reform of the Augustan Calendar at present in use in Europe and America and more or less in every part of the globe, has of late years been occupying attention in many different countries, and that there is reason to believe that steps will be taken, at no distant day, for inviting a consideration of the question by the leading governments of the world.

Various schemes for the simplification of the calendar have been proposed. All aim at preventing that dislocation of the relation of the days of the week to the days of the month, which has hitherto been the necessary result of dividing the 365 days of the year into weeks.

The proposed remedy for this, common to all the schemes which the Society has examined, is to leave one day of the year unaccounted as a day of the month and unnamed as a day of the week, and to call it simply "New Year's Day."

The Society has had the opportunity of studying most of the plans that have been suggested, and is inclined to regard one which was specially brought to its notice by Mr. Mason B. Cotworth of New Westminster, B. C. (formerly of York, England), in a paper read before its mathematical section four years ago, as on the whole the simplest and the most advantageous of all.

Mr. Cotworth's proposition is that the year should be divided into thirteen months of 28 days each, making 364 days in all. The 365th day he would dispose of, in the manner already explained, by giving it a name only and not allowing it any place in a month or week.

This being done, the days of the week would, throughout the year, and from year to year in perpetuity, fall on fixed days of the month. All Sundays, for example, would fall either on the 1st, 8th, 15th or 22nd of the month; all Mondays on the 2nd, 9th, 16th or 23rd, and so on. The thirteenth month would be intercalated, under some suitable name, between June and July; and the extra day required for leap year would be assigned to some suitable place in the year, without being counted either as a day of the month or a day of the week.

The inconvenience of the present calendar is understood by all intelligent persons. The recourse had to printed calendars and almanacs, when matters of date are in question is a constant reminder of the drawbacks of the present system.

That the loss of time and occasional confusion and error thus arising constitute, in the aggregate, no inconsiderable tax on human energy may very reasonably be maintained.

A resolution affirming the necessity of a reform of the calendar was carried at the meeting of the International Association of Chambers of Commerce held last year in London; and, as long ago as February, 1906, a Calendar Reform Bill, based upon a scheme set forth in a pamphlet issued by Mr. Alexander Phillips, LL.B., of Brechin, Scotland, was introduced in the House of Commons.

The Council of the Royal Society, recalling the fact that thirty years ago the system of "Standard Time" now in use by all leading nations of the globe was initiated in Canada, and brought to the attention of the Imperial authorities by His Excellency the Marquis of Lorne, then Governor-General, who in the following year became the founder of this Society, feel emboldened to hope that if Your Royal Highness in Council should see fit to transmit the recommendation of this Society in favor of the reform now in question to His Majesty's government, the result might be a further benefit of the utmost importance to the whole civilized world.

Assisted, as the Society is, in its operations by the Government and Parliament of Canada, it feels called upon to interest itself in all that makes for the welfare, in the first place, of this country and the British Empire at large, and secondarily of the general community of nations; and it is under the influence of this sentiment that the Society has authorized the action which the Council is now taking in approaching Your Royal Highness in Council on this question. (Signed) W. N. LESUEUR,

President.

EVOLUTION OF EUROPEAN PROPOSALS—POSSIBLE NEW ERA

That petition was heartily endorsed by the Canadian Government, who have requested the British Government to assemble an Official International Conference to consider the proposed improvement at an early date.

As the 2nd and 3rd paragraphs of the Royal Society of Canada's Petition to His Royal Highness the Governor-General-in-Council, whilst urging Mr. Cotsworth's proposals, refers to other plans that have been suggested to simplify the Calendar, the International Almanak Reform League desire to record the fact that those slightly varied plans (which only suggest different locations for the "Skip-day" and less convenient months) are but partial modifications of the original proposals made by Mr. Cotsworth, who in the year 1895 originated the "*Dies-non Skip-day*" method of separating the 365th day of each year—and "Leap-day" in every Leap-year, from week-day names, to permanently win for humanity a "Fixed International Calendar" or "Yearal."

One proof-copy of those proposals, whilst lent to a friend, was taken advantage of by the enterprising reporter then seeking "copy" for the 1st edition of the "Sunday Mail" in London, England, wherein they were published without consent, but duly acknowledged as from him.

Mr. Cotsworth's circular-letters, essays, etc., issued during the subsequent 10 years, advocating the Reform, gradually impressed thoughtful people that the proposals were practicable and could soon be won to benefit this and future generations.

After his 472-page book on the "Rational Almanac" was published in 1905, readers became convinced the Fixed Calendar proposed was highly desirable, and advocated it.

For example, Mr. J. F. Cole, F.R.A.S., of Sutton, Surrey, England, while in Switzerland, published in the 13th July, 1905, issue of the "Gazette de Lausanne" a short explanation of Mr. Cotsworth's first proposals, which thence circulated through German, French, Belgian and other European newspapers, arousing the interest of such able advocates in all nations as those leaders listed on page 72—to all of whom the International Almanak Reform League tender cordial acknowledgement for the very valuable advocacy they have so helpfully rendered towards accomplishing Calendar Reform.

From those have arisen the slightly varied proposals since evolved by various advocates, who all agree that the time is now ripe for the present generation to step forward, and by the easy means of utilizing

the impending International Calendar Conference, mutually benefit all people throughout every nation by replacing our present defective calendars by one Fixed International Calendar or "Yearal" to better serve humanity during all future years.

From the foregoing we may fairly deduce that if the Official International Conference, to be soon assembled, recommends that the last 10 days of our year 1918 should be closed out to begin all future years truly with Nature's years by declaring Dec. 23rd of that year only shall become Jan. 1st, to begin a New Era and simpler Calendar all Nations can promptly adopt, then we may rest assured that such a beneficial change can be easily accomplished.

The draft legislation the Conference will in that event submit, will simply provide that for December, 1918, only, 71 per cent. of Rents, Taxes, etc., shall be payable—because the 23 days in that December will only be 71 per cent. of our present 31 December days.

As to whether that advanced Jan. 1st shall be Calendared as beginning the next year, 1919 (so easily remembered) or be Jan. 1st of the Year 1 in a new "Yera," dating from the year ending the most epoch-marking readjustment of European affairs following the end of wars, will be for that International Conference to decide.

Sufficient evidence has been submitted herein to dispel from all reasonable minds the false ideas that our Calendars were either wisely arranged or as unalterable as the motions of the Sun, Moon and Stars.

The plain facts disclose the crude, haphazard, and ill-considered ways by which our Calendars (though the best of many in use) have been patched up, twisted backwards and forwards in varying degrees according to the will or caprice of ancient Pontiffs and Caesars, who have handicapped us by incessantly changing day-names in every month and year, and failed to fit weeks evenly within months varying from 28 to 31 days long—inflicting upon us the many inconveniences and increasing loss, all of which can be permanently overcome by the International adoption of the "Yearal."

THE GREAT TWIN PROGRESSIVE CONTINENTS OF AMERICA HAVE COMBINED EUROPEANS, ASIATICS AND AFRICANS in the USE of ONE CALENDAR—PROVING HOW EASILY the NATIONS of EUROPE, ASIA and AFRICA, HANDICAPPED by their MANY CALENDARS, may PROFIT by adopting one INTERNATIONAL CALENDAR, and GAIN FAR MORE by UNITING in CONFERENCE to UNIVERSALLY ADOPT the "YEARAL."

Photo-reproduction of the
BRITISH CALENDAR
which "skipped" 11 days
between Sept. 2nd and
14th, 1752.

1752

September hath six Days, this Year.

Day	Month	Year	Feast
1	Sept	1752	St. Michael's Day
2	Sept	1752	St. Matthew's Day
3	Sept	1752	St. Simon and St. Jude
4	Sept	1752	St. Andrew's Day
5	Sept	1752	St. John the Baptist's Day
6	Sept	1752	St. Peter's Day
7	Sept	1752	St. Paul's Day
8	Sept	1752	St. Lawrence's Day
9	Sept	1752	St. Vincent's Day
10	Sept	1752	St. Elizabeth's Day
11	Sept	1752	St. Agatha's Day
12	Sept	1752	St. Lucy's Day
13	Sept	1752	St. Barbara's Day
14	Sept	1752	St. Ursula's Day
15	Sept	1752	St. Margaret's Day
16	Sept	1752	St. Catherine's Day
17	Sept	1752	St. Anne's Day
18	Sept	1752	St. John the Evangelist's Day
19	Sept	1752	St. Thomas's Day
20	Sept	1752	St. James's Day
21	Sept	1752	St. Philip's Day
22	Sept	1752	St. James's Day
23	Sept	1752	St. John the Baptist's Day
24	Sept	1752	St. Peter's Day
25	Sept	1752	St. Paul's Day
26	Sept	1752	St. Lawrence's Day
27	Sept	1752	St. Vincent's Day
28	Sept	1752	St. Elizabeth's Day
29	Sept	1752	St. Agatha's Day
30	Sept	1752	St. Lucy's Day
31	Sept	1752	St. Barbara's Day

The Situation of the Moon in Mark's Body,
Falling under the Twelve Zodiacal
CONSTELLATIONS.

Day	Month	Year	Feast
1	Sept	1752	St. Michael's Day
2	Sept	1752	St. Matthew's Day
3	Sept	1752	St. Simon and St. Jude
4	Sept	1752	St. Andrew's Day
5	Sept	1752	St. John the Baptist's Day
6	Sept	1752	St. Peter's Day
7	Sept	1752	St. Paul's Day
8	Sept	1752	St. Lawrence's Day
9	Sept	1752	St. Vincent's Day
10	Sept	1752	St. Elizabeth's Day
11	Sept	1752	St. Agatha's Day
12	Sept	1752	St. Lucy's Day
13	Sept	1752	St. Barbara's Day
14	Sept	1752	St. Ursula's Day
15	Sept	1752	St. Margaret's Day
16	Sept	1752	St. Catherine's Day
17	Sept	1752	St. Anne's Day
18	Sept	1752	St. John the Evangelist's Day
19	Sept	1752	St. Thomas's Day
20	Sept	1752	St. James's Day
21	Sept	1752	St. Philip's Day
22	Sept	1752	St. James's Day
23	Sept	1752	St. John the Baptist's Day
24	Sept	1752	St. Peter's Day
25	Sept	1752	St. Paul's Day
26	Sept	1752	St. Lawrence's Day
27	Sept	1752	St. Vincent's Day
28	Sept	1752	St. Elizabeth's Day
29	Sept	1752	St. Agatha's Day
30	Sept	1752	St. Lucy's Day
31	Sept	1752	St. Barbara's Day

SEPTEMBER, 1752.

The day of the week, shown in the margin.

Day	Month	Year	Feast
1	Sept	1752	St. Michael's Day
2	Sept	1752	St. Matthew's Day
3	Sept	1752	St. Simon and St. Jude
4	Sept	1752	St. Andrew's Day
5	Sept	1752	St. John the Baptist's Day
6	Sept	1752	St. Peter's Day
7	Sept	1752	St. Paul's Day
8	Sept	1752	St. Lawrence's Day
9	Sept	1752	St. Vincent's Day
10	Sept	1752	St. Elizabeth's Day
11	Sept	1752	St. Agatha's Day
12	Sept	1752	St. Lucy's Day
13	Sept	1752	St. Barbara's Day
14	Sept	1752	St. Ursula's Day
15	Sept	1752	St. Margaret's Day
16	Sept	1752	St. Catherine's Day
17	Sept	1752	St. Anne's Day
18	Sept	1752	St. John the Evangelist's Day
19	Sept	1752	St. Thomas's Day
20	Sept	1752	St. James's Day
21	Sept	1752	St. Philip's Day
22	Sept	1752	St. James's Day
23	Sept	1752	St. John the Baptist's Day
24	Sept	1752	St. Peter's Day
25	Sept	1752	St. Paul's Day
26	Sept	1752	St. Lawrence's Day
27	Sept	1752	St. Vincent's Day
28	Sept	1752	St. Elizabeth's Day
29	Sept	1752	St. Agatha's Day
30	Sept	1752	St. Lucy's Day
31	Sept	1752	St. Barbara's Day

PLATE 19

shows how the LAST
BRITISH REFORM of
the CALENDAR was
effected (consequent upon
Pope Gregory XIII's
wise reform of 1582),
when the 11 days between
Sept. 2 and Sept. 14 were
omitted, and the follow-
ing printed in that space:

"According to an Act of Parliament passed in the 24th year of His Majesty's reign and in the year of our Lord 1752, the Old Style ceases here, and the New takes place; and consequently the next day, which in the Old Account would have been the 3rd, is now to be called the 14th, so that all the intermediate Nominal Days, from the 2nd to the 14th, are omitted, or rather annihilated this year, and the month contains no more than 19 days, as the Title at the Head expresses."

How the last of the GREGORIAN Reforms of the Calendar was Accomplished in 1752

The "Observations" reproduced below from the left of the lower companion page of the British Almanak for September, 1752, detail the simple process by which Protestant England followed the lead of Western European nations who easily adopted Pope Gregory the Great's suggestion to omit 10 days between the 5th and 15th October, 1582, to adjust the year that had drifted 10 days from the Seasons through Calendar constructors computing $365\frac{1}{4}$ days per year, according to the "Julian Style" of Julius Caesar, instead of the truer 365.242 days—as explained on pages 55 to 58.

"OBSERVATIONS"

"It is to be observed that the several Feast Days on which the payment of Rents, Annuities, etc., depend, and also the Opening of Common Fields or Pastures, are by the Calendar established by the late Act of Parliament, fixed upon the same Nominal Days of the respective months as before in the Julian Account they were placed; yet the Act provides and directs that the payments of Rents, Annuities, etc., or the Opening or Shutting of Pastures shall not by this means (11 days omitted) be accelerated or forwarded; but that the days of Payment, or Right of Opening or Closing Commons, formerly depending on the said Feasts, are to be kept and observed on the same natural Days of the year on which the said Feasts would have fallen if this Act had not been made; for this Reason the 10th October is called Michaelmas Day, and the 22nd of November, Old Martinmas Day, and so of the rest as being the respective Days on which such Rents or Payments become due, or on which such rights of Commons, etc., take place—and not before.

"N.B.—That all Dates of Births, Deaths, or other remarkable events, in the Regal or Chronological Tables, prior to, or upon the 2nd September, 1752, are to be understood according to the Julian Account, or Old Style."

In that year no one could die on any of the 11 days from 3rd to 13th September inclusive, because those days were omitted. Neither could persons whose birthdays were due on those days, celebrate them until September 14th, when they followed on the same natural days in the year, but dated 11 days later. Similarly the payment of accounts due on those days were payable on dates calendar 11 days later.

But each day from September 14th, 1752, onwards, followed in usual sequence, although actually recorded 11 days before the corresponding dates in the Julian style to which Russia and the Greek-church countries of Southern Europe still adhere, and as they have since lost 2 more days their 150,000,000 people now drag on 13 days behind our Calendar.

The result is that Russians, Greeks and Slavic nations celebrate their Festivals, Saints' Days, etc., as Calendar events 13 days after other European and American nations have passed their corresponding Festivals, etc., therefore they celebrate Christmas Day on our January 7th, which is accordingly noted on our Calendars as Old Christmas Day.

Happily they use the same week-day names as we for current days, as also do the Chinese and Japanese. Consequently the desired "YEARAL" as an International FIXED Calendar can best be derived by ending it upon the proposed "Skip-day" to ensure the fixity of the

Simplicity of the Proposed Reform and How Easily it Can be Won

52 weeks plus that day to complete the usual 365-day year, and similarly cause "Leap-day" to leap the week-day-name each Leap-year to keep the 52 permanent weeks *undisturbed*.

Thus we have recent historic proofs of the facility with which a greater change than even the extreme 9 days' reversion of Skip-day from December 31st to December 22nd was accomplished little more than 160 years ago, when the masses of even Europeans could neither read nor write. Small wonder, therefore, that odd groups of ignorant farm laborers then asked for their 11 days to be hopped back, and later were surprised to find that they had not lost them.

That Reform was effected under far more difficult conditions. Printed calendars were rare and religious prejudice extreme. Roman Catholic countries had Christmas, etc., 11 days before Protestants and their wrangling was incessant—but now those difficulties have been dissolved by education and mutual respect. See page 88.

SIMPLICITY OF THE PROPOSED CHANGE

The fact of having 52 weeks plus one day in ordinary years, results under our incessant week-system in that odd day becoming the 53rd Sunday in non-leap years beginning with Sunday, thus altering the following New Year's Day to Monday, which causes the next December 31st to become the 53rd Monday, and in its turn force changes of day-names throughout following years.

We can avoid those confusing changes now consequently divorcing Christmas, Thanksgiving and other National Holidays from their best locations in conjunction with the week-end extensions now most needed to permanently enhance our recreative and social enjoyment, by simply fixing that end-day of each year as "Skip-day" without week-day-name, even if we let it count as an appendage to December, as Leap-day does when appended as the extra 29th of February inserted between February and March.

Similarly the proposed new month can be just as readily inserted between the last day of June and the first day of July, to derive 13 equal months of 4 weeks each, exactly like February, 1914, which begins on Sunday and ends its 28 days on Saturday, so that whether wages are paid weekly, fortnightly or monthly all periods of earning and expenditure for every purpose would then be most conveniently equated.

There cannot arise such difficulties as confront the universal adoption of the "Metric System."

Business people will readily balance their books to ascertain their profits and costs of working then, and avert such Bad Debts as our calendar propagates during months in which 5 Saturdays occur, in about 4 months each year, necessitating the purchase of the 5th week's provisions out of one month's pay, thus unconsciously drifting less thrifty people into arrears. The adoption of the "Yearal" would FIX all day-names, make all periods for earning and spending equal; and thus circulate money more freely.

HOW EASILY THE "YEARAL" CAN BE WON

1st. The International Conference will be assembled, with the advice of astronomers thereat, to decide:

(a) The location of the "Skip-day" to relieve the 53rd week-day (now occurring beyond the 52 weeks each year) from week-day name and proclaim it as an International "Good-will" Holiday, preferably between the last day of December and New Year's Day, to secure permanent day-names. Also the removal of "Leap-day" to mid-summer, as an International Holiday.

(b) The best style of permanent months, preferably patterned like the 4 weeks comprised in February, 1914, in order that all months may end with the week—to gain equal months and the world-wide convenience that would bring equal periods for earning, spending, etc.

(c) The best permanent date for Easter, as the German Government, Vatican and other authorities are preparing to do.

(d) As to whether the "Yearal" shall begin as midnight closes the "Shortest Day," to win simultaneous acceptance by all Nations, Races and Creeds.

(e) The draft legislation the Conference will prepare for recommendation to the Governments of every Nation, for adoption on the date suggested by the Conference.

2nd. Each Nation will next enact that draft Bill through its Legislatures, and date therein its Special National Holidays, etc., transposed to their corresponding dates when registered upon the "Combined Calendar" the Conference's final draft form will prescribe in some such form as that tentatively suggested on "Table B," page 76.

FINALLY, the Astronomers, Tide-table Constructors, Calendar, Compilers and Printers will prepare the "Yearal Calendars," Almanaks, Diaries, Day-tablets, etc., accordingly; whilst the Watch and Clock-makers will print the outer circle dates on future permanent Time-recorders, as per the Watch perched on the Sphinx, on Plate "A."



FATHER CHRISTMAS presenting the proposed "YEAR-AL" and **CALENDAR CLOCK** to **FATHER TIME**, who is so delighted with the prospect of renewing his youth by adopting the "YEAR-AL" of perpetual Calendar life, that he is preparing to abandon the "Old Style Calendars" by Christmas, 1918.

Difficulty having been experienced by advocates of Calendar Reform, in identifying the writer, on arrival in other cities and abroad, it has been suggested that this photo may facilitate identification by the white flat-tie, and expedite interviews with persons interested in this Reform, when meeting the writer.



MOSES B. COTSWORTH, of **NEW WESTMINSTER, B.C., CANADA**, formerly of **York, England**

MR. COTSWORTH IS KNOWN TO THE BUSINESS WORLD AS THE ORIGINATOR OF THE PROPOSED FIXED "YEAR-AL," FIRST OUTLINED IN HIS BOOK, (1) "THE RATIONAL ALMANAC." HIS OTHER USEFUL WORKS INCLUDE (2) "RAILWAY MAXIMUM RATES," THE STANDARD BRITISH WORK, AND THE (3) "DIRECT CALCULATORS." THESE LATTER, WITH HIS (4) "RECIPROCAL," ARE USED BY THE LEADING COMMERCIAL, PROFESSIONAL AND SCIENTIFIC MEN, AND THE GOVERNMENT DEPARTMENTS OF NEARLY ALL NATIONS.

An epitome of the main reasons for advocating the Reform, also an indication of some of the many practical benefits we can gain by use of the proposed "Yearal," are printed on the "inset-card" for handier reference by advocates of Calendar Reform.

Study of the "Combined" Calendar on page 76, for transposing the dates between the present Shifting Calendar and the proposed Fixed "Yearal" after the year 1918, convinces our calendar-makers and weather-predictors that the datal change will not harm anyone, but will benefit agriculture and every other beneficial interest, as the gradual change will be imperceptible when compared with the ordinary variations of seasonal weather. *It will daily help us all.*

(1) and (2) published by G. Allen & Sons, 44 Rathbone Place, London. (3) and (4) by McCoguard & Co., 41 Coleman St., London, E.C., England.

The "AMPLITUDE METHOD" of LOCATING the SEASONS— DIAGRAM of JACOB'S "AMPLITUDE OBSERVATORY STAKES."

of locating the Seasons was used in Ancient Britain and

IV. Those J W E. and S. points were used as the basis for Jacob's "Amplitude Observatory" located by "Amplitude Stakes" of hazel, chestnut and poplar he erected during successive years to register the breeding seasons to increase his flocks of sheep and goats, when he won Leah and Rachel for wives.

But clearly his work was difficult in fixing the two Equinoxial (East) direction of his Amplitude stakes, was due to his lack of true knowledge as to the actual number days in his "6 months" periods. To solve this would take long years of observation, because Jacob would be misled by the fact, then unknown to him, that the Sun's course is not only longer one half-year than the other, but that the time between the Solstices and Equinoxes is never an exact number of days, but days and a fraction imperceptible to him, even after years of carefully "sighting" and "recording" the sun-rise points by his observatory stakes.

Summer Solstice. Equinox. Winter Solstice.



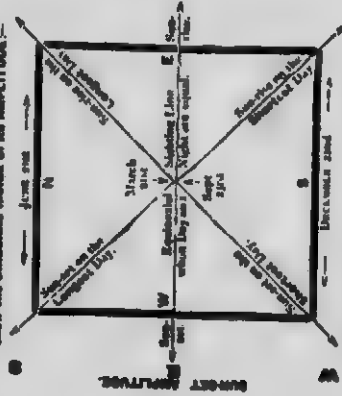
Jacob's Amplitude Observatory Stakes. Central and Distant Sighting Stakes.

The central stake in the circle may be taken to mark the centre stake from which he watched the sunrise however he sighted his stakes in that locality. S denotes the most distant terminal stake, which he had to set in the upon the Summer Solstice, whilst W marks his head stake attempt to fix the Winter Solstice. The angular distance between S and W would mark his measure of the "Half-yearly Amplitude," which would appear equal for both our half-years, which he called "Years." This was the oldest style of Observatory.

Plate "K."—The "Amplitude Method" of North Europe, where the points of Sunrise from Mid-Winter to Mid-Summer are 3 times wider than in Egypt (see Front-plate "D").

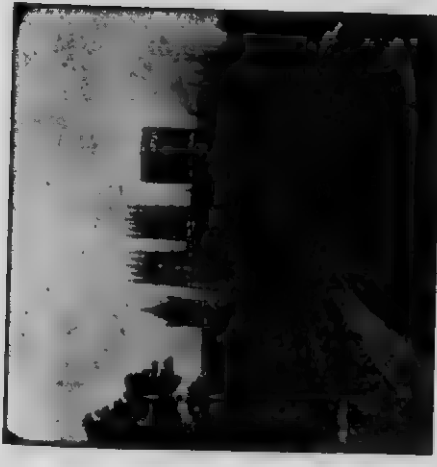
III. The rising ground at York in the centre of the great plain was naturally selected as a "sacred site" for that purpose. The great circle of its horizon was complete.

The earlier simple method of observation used by Jacob can perhaps be best exemplified by the square central tower of York Minster, an observation point of which is given below to show the subsequent element of its AMPLITUDE.



The following statement respecting the remarkable orientation of York Minster will probably surprise most people, but afterwards the Engineers and few friends I was privileged by kind permission of the Dean to take up the Tower on June 21st, 1902, have verified my price leads which had extended over the three previous years at each of the four cardinal "Quarter Dates," December 21st, March 21st, June 21st, and September 21st. I can therefore reach for the following essential "amplitude" facts for York:—

W.—At the WINTER SOLSTICE on DEC. 21st the sun rises over the S.E. corner, and sets over the S.W. corner. The EQUINOXES, when Day and Night are equal on MARCH 21st and SEPT. 23rd, the Sun rises over the Centre of the East Window, and sets between the two West Towers. The SUMMER SOLSTICE, JUNE 21st—the LONGEST Day—the Sun rises over the N.E. corner, and clearly sets over the N.W. corner point.



I. York Minster's Square Unpinnacled Tower (England)



II. Sun-rise across York Minster's N.E. corner, 21 June, 1902

PLATE "L." LATER METHODS of OBSERVATION to CALENDAR the SEASONS.

The following typify the 4 methods employed in remote places during the "Middle Ages" to locally ascertain the Seasons, before Almanaks and Calendars became obtainable by farmers and others through the invention of printing, postal and transport arrangements. They are reproduced with their original descriptions from Mr. Cotsworth's numerous collection.

I. "DIRECT SIGHTING" by MOVABLE CROSS-STAFF. This was the navigator's old method. Columbus used it when discovering America.



The Description and Use of the Cross-staff, or Fore-staff.

THIS instrument consists of a Staff and four Crosses, the first and foremost is called the Ten Cross, and it belongs to that side of the staff which is numbered from about 5 Degrees to 10 Degrees. Sometimes the Thirty Cross, and the rest of the Crosses are made, so that the breadth thereof serves instead of the Ten Cross.

The second Cross is called the Thirty Cross, and belongs to that side of the staff which is numbered from about 10 Degrees to 20.

The Third Cross is called the Sixty Cross, and belongs to that side of the staff which is numbered from about 20 to 30 Degrees.

The Fourth and last Cross is called the Ninety Cross, and belongs to that side of the staff, which is numbered from about 30 to 40 Degrees.

This staff is likewise numbered with the Complement to 90 Degrees, (viz.) at 10 fangs 80, at 20 fangs 70, at 30 fangs 60, and so of the rest.

The Use of this instrument is to take the Meridian Altitude of the Sun, which is done as followeth.

The "Cross-piece," B.C., is interchangeable with the 3 of proportionate extension according to the seasonal altitude of the Sun, and is moved along the staff nearer the eye for higher elevations, or from the eye for lower. The lower end indicates the "horizon's South-point" between which and the Sun the season's "cross," when read at the cross-point.

Like the "Clog Almanak" shown opposite paragraph 15 of the Revolution section, the staff had 4 sides to register the 4 seasons by the noon-Sun, which (vide the Fans on Plates N and P) yearly rises and falls $46^{\circ} 54'$ on the sky-meridian—a wide range needing 4 "crosses," though the 4th was used mostly for locating high stars.

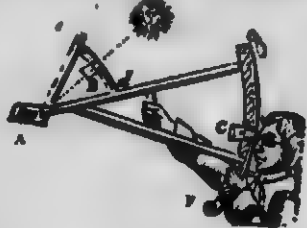
II "DIRECT SIGHTING" ACROSS TOPS of HIGH ERECTIONS.



The Iron Pillar and Kutab Minar.

At Delhi (India), by "sighting" over the Iron Pillar to the Sun or Stars passing over the high tower the Seasons could be approximated. Higher (Pyramid) Erections point truer lines of observation. Note the "ringways," with 4 openings as on the Irish Round Towers, to observe horizon "Amplitudes."

III. "INDIRECT SIGHTING" by reflecting SEX-TANTS, invented during the 17th Century to derive more precise observations, and avoid the Sun's glare.



The Use of this instrument is to take the Sun's Meridian Altitude, which is done in the manner following.

Put the Horizon Vane upon the End of the Quadrant at A; the Shade Vane upon the Sixty (or other Arch) so a Number of Degrees left then the Complement of the Altitude by 15 or 20d, and the Sight Vane upon the Thirty Arch. The Vane being thus fixed upon the Quadrant, give a Mark being turned towards the Sun, and the Sight Vane placed to the Eye, look thro' the said Sight Vane, and enable the Shadow of the upper Edge of the Shade Vane to fall upon the upper Part of the Scale in the Horizon Vane, where usually (for Perspective Sake) there is drawn a black Line; and if at the same Time the Horizon appear thro' the said Side in the Horizon Vane, that is the Sun's present Altitude; but if the Sun appear instead of the Horizon, then slide the Sight Vane lower towards F, if the Sky appear instead of the Horizon, then slide the Sight Vane a little higher, until the Horizon appear through the Horizon Vane. But to observe the Meridian Altitude.

IV. NATURAL SUN-DIALS



Natural Sun-dial at Settle, Yorkshire, England.

called Castleberg. Until about a hundred years ago a great mass of rock on that hill formed a natural sun-dial. It is shown rather crudely on this page in a reproduction of an old engraving, given in Smith's *Old Yorkshire*. It is thus described in the letters of Bishop Pococke, written in 1750, and now edited for the Camden Society:—

"Crossing the Ribble, we came in a quarter of a mile to Settle, a little town situated under a high rocky hill; on the lower part of which, four stones being placed, they serve as a sun-dial to the country for three or four miles southward, as they know what hour of the morn it is. The shadow comes to them from eight to twelve."

The stones range from the right lower corner up to the rock, whence shadows were crudely wing as from the Egyptian Pyramids.

Such simple shadow methods are still used by primitive races in many parts of the world.

(Plate M)—"SHADOW METHODS" OF RECORDING DAILY TIME. The following demonstrate the continued use of shadows down to the end of the 18th Century—especially in Egypt during Napoleon's Expedition:

EXCERPT FROM MEMOIRS OF EGYPT by the FRENCH EXPEDITION OF SCIENTIFIC MEN following General Bonaparte's Campaign, 1798 and 1799.

Translated by R. Phillips, London, 1800.

Page 284.—"The Arabs measure their day by the stated times for prayers. They

- "Time by the Length of their Shadow: the
- "Shadow is measured with their naked feet, which
- "they place alternately one before the other.
- "Their rules for estimating are: that in the
- "Summer Soletics mid-day is 1 foot from the
- "vertical point; that in Winter at the same hour
- "the Shadow is 9 feet in length; that in Summer
- "the Shadow which answers to the middle point
- "of the interval from noon to sunset is 7 feet
- "beyond the place of the Shadow at noon. These
- "measurements are exactly conformable to the
- "Latitude of the Country."

The term "Latitude" was probably derived from such "LAT" erections as that ending Front-plate "C." Laborers in Egypt still use that method, and for timing hours locate shadows from sticks by arranging pebbles equidistant on the ground to mark "times to change oxen," etc.



II. The Garden Plot's Shadow recording the Hours on the Flower-bed Dial. That indicates how our Dials were derived for Clocks and Watches. The Shadow is pointing the Time at 2.0 p.m.

PHOTO-PRINT FROM THE "TRAVELLER'S ALMANAC" for 1711

1712

Sticks in Summer

Height 6 and 12	Length 12	Length 12
Distance 12	Distance 12	Distance 12
Day 12	Day 12	Day 12

Use of the Sun-stick

For a full understanding of the use of the Sun-stick, the reader is referred to the Traveller's Almanac for 1711, page 12. The stick is used to measure the length of the shadow cast by a stick of a given height at a given time of day. The length of the shadow is measured in feet, and the time of day is determined by the length of the shadow. The stick is used to measure the length of the shadow cast by a stick of a given height at a given time of day. The length of the shadow is measured in feet, and the time of day is determined by the length of the shadow.

January last 1711 Days

Day	Length of Shadow	Time of Day
1	12	12
2	11	11
3	10	10
4	9	9
5	8	8
6	7	7
7	6	6
8	5	5
9	4	4
10	3	3
11	2	2
12	1	1
13	1	1
14	2	2
15	3	3
16	4	4
17	5	5
18	6	6
19	7	7
20	8	8
21	9	9
22	10	10
23	11	11
24	12	12

III. The lengths of Shadows cast on every 5th day in January are shown hourly from 8.0 a.m. to 4.0 p.m. These Calendar Records of proportionate shadow-lengths were generally used until watches became plentiful. The above described Dial-staff is depicted in use on Fig. IV, as was Aaron's Rod," vide Pyramid Plate 5.



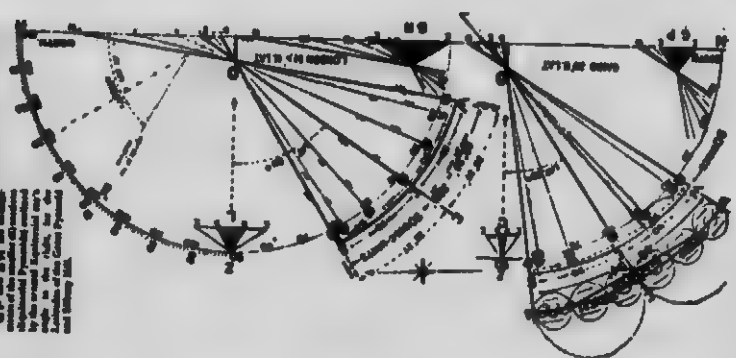
IV. The Traveller's Sun-dial-staff (as used before watches) notched into 100 parts. The Shadow shown for May 21st being .59 of the Staff's length, indicates Noon; vide the 1st and 6th columns of "The Natural Gauges for the Sun," ex 1712 Almanac on Plate N.



V. Obelisk at Luxor (Thebes), still used by the priests to locate the Seasons. Note the conical apex to "right" the Sun and point the daily Shadow.

Month of January		Month of February		Month of March		Month of April		Month of May		Month of June		Month of July		Month of August		Month of September		Month of October		Month of November		Month of December								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	2	3	4	5	6																									

One Hundred, Please!
Send me 100 copies of the following book, please:
"The Story of the American People," by Howard Chandler Christy, Jr.
The book is a history of the United States from the first settlement to the present day. It is a story of the growth of the nation, of the struggles of the people, and of the achievements of the nation. It is a story of the American people, and of the American spirit. It is a story of the American people, and of the American spirit. It is a story of the American people, and of the American spirit.



These Fans show the 46° 54° year-range, and how Latitude was derived by subtracting the Sun's Elevation at the Equinox from the 90° of Zenith.

COMPARISON of QUANTITATIVE and QUALITATIVE DATA for the Years 1950 and 1951, showing the SURVEILLANCE and WATER-BOON DIFFERENCES in ELEVATION for 5 SURVEILLANCE and each side of the EQUINOXIAL and SOLSTICIAL.

姓名	性别	年龄	籍贯	职业	文化程度	健康状况	婚姻状况	子女情况	其他
王德胜	男	45	山东烟台	工人	小学	良好	已婚	2子1女	
李秀英	女	38	河北保定	教师	大学	良好	已婚	1子1女	
张国强	男	52	江苏苏州	医生	高中	良好	已婚	2子1女	
刘小红	女	28	河南郑州	护士	中专	良好	已婚	1子1女	
陈为民	男	40	浙江杭州	工程师	大学	良好	已婚	2子1女	
赵大伟	男	35	四川成都	农民	小学	良好	已婚	2子1女	
周小芳	女	32	广东广州	会计	高中	良好	已婚	1子1女	
吴建国	男	48	湖北武汉	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	湖南长沙	教师	大学	良好	已婚	1子1女	
郑为民	男	55	安徽合肥	工人	小学	良好	已婚	2子1女	
王小红	女	30	江西九江	护士	中专	良好	已婚	1子1女	
李国强	男	42	福建厦门	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	吉林长春	会计	高中	良好	已婚	1子1女	
吴建国	男	48	黑龙江哈尔滨	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	内蒙古呼和浩特	教师	大学	良好	已婚	1子1女	
郑为民	男	55	宁夏银川	工人	小学	良好	已婚	2子1女	
王小红	女	30	新疆乌鲁木齐	护士	中专	良好	已婚	1子1女	
李国强	男	42	甘肃兰州	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	青海西宁	会计	高中	良好	已婚	1子1女	
吴建国	男	48	四川成都	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	重庆重庆	教师	大学	良好	已婚	1子1女	
郑为民	男	55	湖南长沙	工人	小学	良好	已婚	2子1女	
王小红	女	30	湖北武汉	护士	中专	良好	已婚	1子1女	
李国强	男	42	江西九江	工程师	大学	良好	已婚	2子1女	
周小芳	女	28	广西桂林	会计	高中	良好	已婚	1子1女	
吴建国	男	48	云南昆明	工人	小学	良好	已婚	2子1女	
孙丽娟	女	25	贵州贵阳	教师	大学	良好	已婚	1子1女	
郑为民	男	55	陕西西安	工人	小学	良好	已婚	2子1女	
王小红	女	30	山西太原	护士	中专	良好	已婚	1子1女	
李国强	男	42	辽宁沈阳	工程师	大学	良好	已婚	2子1女	
周小芳	女</								

(2) Annual Expenditure, March 1934 to 1935. (3) Annual Expenditure, 1935 to 1936. (4) Annual Expenditure, 1936 to 1937. (5) Annual Expenditure, 1937 to 1938. (6) Annual Expenditure, 1938 to 1939. (7) Annual Expenditure, 1939 to 1940. (8) Annual Expenditure, 1940 to 1941. (9) Annual Expenditure, 1941 to 1942. (10) Annual Expenditure, 1942 to 1943. (11) Annual Expenditure, 1943 to 1944. (12) Annual Expenditure, 1944 to 1945. (13) Annual Expenditure, 1945 to 1946. (14) Annual Expenditure, 1946 to 1947. (15) Annual Expenditure, 1947 to 1948. (16) Annual Expenditure, 1948 to 1949. (17) Annual Expenditure, 1949 to 1950. (18) Annual Expenditure, 1950 to 1951. (19) Annual Expenditure, 1951 to 1952. (20) Annual Expenditure, 1952 to 1953. (21) Annual Expenditure, 1953 to 1954. (22) Annual Expenditure, 1954 to 1955. (23) Annual Expenditure, 1955 to 1956. (24) Annual Expenditure, 1956 to 1957. (25) Annual Expenditure, 1957 to 1958. (26) Annual Expenditure, 1958 to 1959. (27) Annual Expenditure, 1959 to 1960. (28) Annual Expenditure, 1960 to 1961. (29) Annual Expenditure, 1961 to 1962. (30) Annual Expenditure, 1962 to 1963. (31) Annual Expenditure, 1963 to 1964. (32) Annual Expenditure, 1964 to 1965. (33) Annual Expenditure, 1965 to 1966. (34) Annual Expenditure, 1966 to 1967. (35) Annual Expenditure, 1967 to 1968. (36) Annual Expenditure, 1968 to 1969. (37) Annual Expenditure, 1969 to 1970. (38) Annual Expenditure, 1970 to 1971. (39) Annual Expenditure, 1971 to 1972. (40) Annual Expenditure, 1972 to 1973. (41) Annual Expenditure, 1973 to 1974. (42) Annual Expenditure, 1974 to 1975. (43) Annual Expenditure, 1975 to 1976. (44) Annual Expenditure, 1976 to 1977. (45) Annual Expenditure, 1977 to 1978. (46) Annual Expenditure, 1978 to 1979. (47) Annual Expenditure, 1979 to 1980. (48) Annual Expenditure, 1980 to 1981. (49) Annual Expenditure, 1981 to 1982. (50) Annual Expenditure, 1982 to 1983. (51) Annual Expenditure, 1983 to 1984. (52) Annual Expenditure, 1984 to 1985. (53) Annual Expenditure, 1985 to 1986. (54) Annual Expenditure, 1986 to 1987. (55) Annual Expenditure, 1987 to 1988. (56) Annual Expenditure, 1988 to 1989. (57) Annual Expenditure, 1989 to 1990. (58) Annual Expenditure, 1990 to 1991. (59) Annual Expenditure, 1991 to 1992. (60) Annual Expenditure, 1992 to 1993. (61) Annual Expenditure, 1993 to 1994. (62) Annual Expenditure, 1994 to 1995. (63) Annual Expenditure, 1995 to 1996. (64) Annual Expenditure, 1996 to 1997. (65) Annual Expenditure, 1997 to 1998. (66) Annual Expenditure, 1998 to 1999. (67) Annual Expenditure, 1999 to 2000. (68) Annual Expenditure, 2000 to 2001. (69) Annual Expenditure, 2001 to 2002. (70) Annual Expenditure, 2002 to 2003. (71) Annual Expenditure, 2003 to 2004. (72) Annual Expenditure, 2004 to 2005. (73) Annual Expenditure, 2005 to 2006. (74) Annual Expenditure, 2006 to 2007. (75) Annual Expenditure, 2007 to 2008. (76) Annual Expenditure, 2008 to 2009. (77) Annual Expenditure, 2009 to 2010. (78) Annual Expenditure, 2010 to 2011. (79) Annual Expenditure, 2011 to 2012. (80) Annual Expenditure, 2012 to 2013. (81) Annual Expenditure, 2013 to 2014. (82) Annual Expenditure, 2014 to 2015. (83) Annual Expenditure, 2015 to 2016. (84) Annual Expenditure, 2016 to 2017. (85) Annual Expenditure, 2017 to 2018. (86) Annual Expenditure, 2018 to 2019. (87) Annual Expenditure, 2019 to 2020. (88) Annual Expenditure, 2020 to 2021. (89) Annual Expenditure, 2021 to 2022. (90) Annual Expenditure, 2022 to 2023. (91) Annual Expenditure, 2023 to 2024. (92) Annual Expenditure, 2024 to 2025. (93) Annual Expenditure, 2025 to 2026. (94) Annual Expenditure, 2026 to 2027. (95) Annual Expenditure, 2027 to 2028. (96) Annual Expenditure, 2028 to 2029. (97) Annual Expenditure, 2029 to 2030. (98) Annual Expenditure, 2030 to 2031. (99) Annual Expenditure, 2031 to 2032. (100) Annual Expenditure, 2032 to 2033.

To find the daily difference in the length of shadows which the 27° change will cause, the first step is to determine from the true Moon's center what hours before or after noon he is in which the Sun's shadow is recorded. As he is here in mind, on the 20th of March, to be in the position of the Sun at 12 noon, therefore on the 20th of March the length of the shadow of the obelisk, at that point, is only the 27° of the value from the base of the obelisk's shadow on each side of 60.

The Moravian Abbot of the Mon at the Great Pyramid during the Egyptian being 60, he takes from the mathematical table the Co-ordinate, and orders the degrees, to get the difference in the shadow length proportional to the pyramid's height, thus:

...

[illegible]

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

[illegible]

1946

Expenditure into own studies group of £1000

This request for conversion will be the

• 0-000 00. 00000000

At first sight, the Great American People may seem unnecessarily large, but that certain promptly designed was constructed of the finest and strongest American material, and has been tested and found to be most reliable.

...the ... of ...

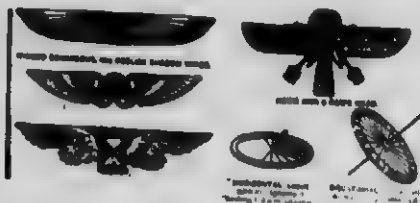
...to celebrate the 2003 football day
length of the 2003 days" - Ebu Yau.

of great difficulty in understanding and describing the religious influences from their *Lebensgemeinschaft*, the Spring and Autumnal feasts ended each year of marriage a full year separated the child from the parents until the second marriage day of

There is a lot of information and many questions about the new and improved way of doing things.

(Plate "O") **RECORDS of SHADOWS from PYRAMIDS and CONES**

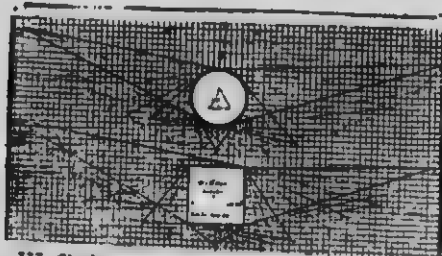
As Pyramids were used in Egypt, Assyria, Mexico, etc., but Cones in Peru, Siam and Central Africa, the writer experimented during several years with models of both, carefully orientated upon diagram-squared-paper, and outlined thereon their shadows every hour (as reproduced below), during the Equinoxes and Midsummer. Those demonstrated that Pyramids and Cones of equal height gave identical records of the Seasons, but Pyramids were easier to build higher. Both records resembled



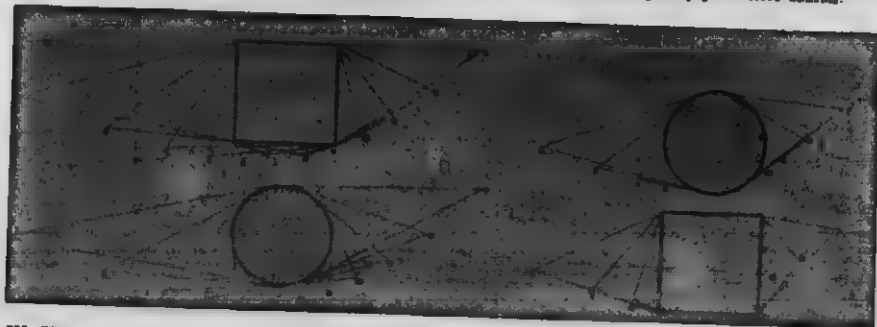
I. The **SHADOW-WINGS** on **EGYPTIAN TEMPLES** and the Daily Shadows on Sun-dials, indicating the "Flight of Time."



II. M. E. Cotsworth's models, ex Series A B C, casting the 7.0 p.m. Mid-summer Shadow, recorded on the corresponding diagrams below:



III. Shadow-records from models Orientated, then casting shadows true North up the Meridian-line.

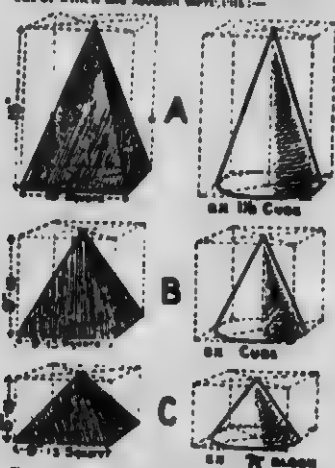


IV. Shadow-grams from Models wrongly Orientated, showing Noon-shadows deflected from the Meridian-line.

V. The study of these led me to think that the designers or builders in drawing antients **POINTER-TOWARDS-PALESTINE-THE-SUN-ORIENTAL-PYRAMID**

for testing the Sun's course, would be quickened by the increasing tendency of the Sun-shadows to cast their Northern-shade in a continuous straight line the nearer the pyramid approached the true 35° N. Lat. position—pointed its apex was devoted to the Equatorial meridian point when viewed from the North.

To test this idea, and determine what was the best possible shape of pyramid, such as of pyramids and cones were made parallel to the same A B C, to thereby prove the shadow effect of a fixed standard height and shape, as illustrated in the dark blocks below, where the dotted outline shows the full size of the blocks out of which the models were cut:—



The Pyramid A is the greatest obtainable from a cube-and-a-half whose base is ten inches square and height fifteen inches.

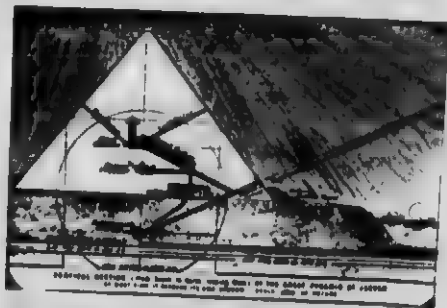
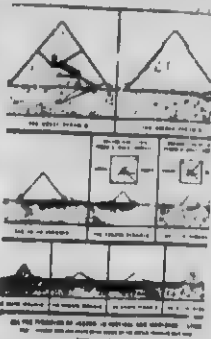
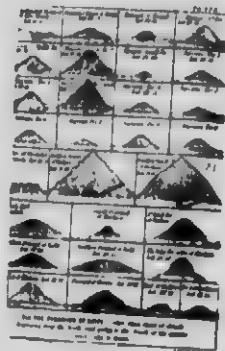
The Pyramid B is the largest obtainable from a cube whose side is eighth of the (first Pyramid's) base.

The Pyramid C is an exact model of the Great Pyramid, on the scale of eighth of its dimensions, as cut from a cube.

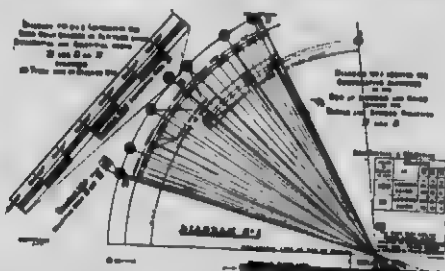
The Cones are the same height and diameter of base as the pyramid with which they are respectively paired for comparison.

All the above, with others of smaller size representing obelisks and trilithons or cross-horns, were placed on the duly orientated and levelled diagram papers before casting.

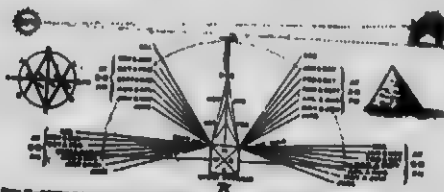
(Plate "P") SECTIONS of EGYPTIAN PYRAMIDS with DIAGRAMS of their Observatory Tubes, Shadow Floor, and Lengths of the shortest final Shadows



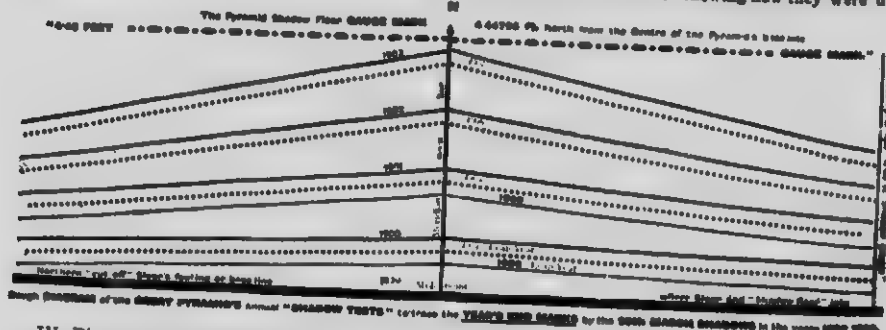
I. Vertical Sections of PYRAMIDS showing their North-pointing Tubes, used as telescopes to locate stars.



II. Diagram showing how the Sun's noon-rays at the Equinoxes indicated the Slope for Pyramids from their mid-point of Seasonal Elevations between Mid-Winter and Mid-Summer (shown for London and Cairo) as the Sun crosses the Equator thus:



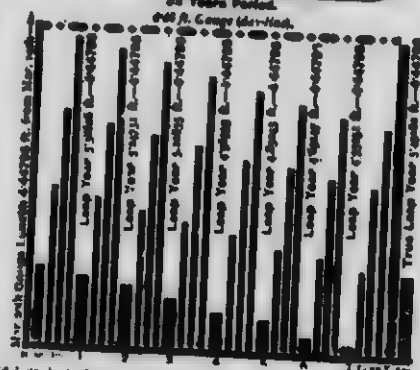
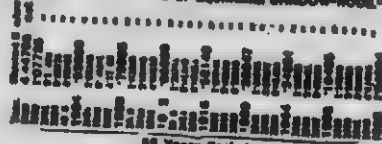
III. Seasonal Ray-lines of Pyramid Shadows, roughly diagrammed for the months, and the Season-dividing points, "Quartering the Year."



IV. Diagram of the Great Pyramid's "Day-gauge" of 4.43 feet, showing the differing lengths of the Shortest-noon Shadows measured on the Meridian Floor-line during 10 successive years. They repeat approximately in 32 year-periods (as indicated by Fig. VI), but more precisely in 128 years.

V. VERTICAL SECTION of the GREAT PYRAMID showing the Observatory passages (used as telescopes) and secret chambers for storing records. But the most significant feature is the "Shadow-floor" purposely levelled on the North side—shown to the right—on which the Meridian-Line extends to the end of that ledge where the longest but feeblest Noon Shadows every day near the "Shortest Day" are too vague for observers to thereby find the Year's length

VI. TABLE of SHORTEST YEARLY SHADOW LENGTHS and from the GREAT PYRAMID, shown in a proportional "SCALE of Equinoctial SHADOW-RODS"

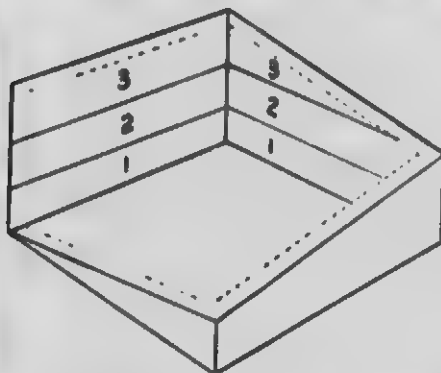


1' 6 days + the fractional day length of the rod = leap year's length. 365 days + the fractional day length of the rod = ordinary year's length. See Pyramid description, Plate 2, for photographs of Meridian Rods "in situ," showing how they were used.

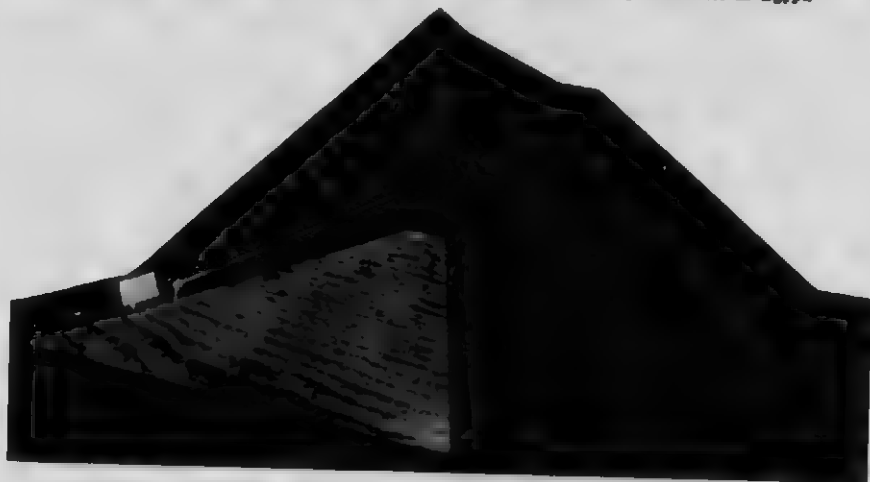
(Plate "Q") Showing HOW the PYRAMIDS WERE BUILT and shaped



I. MOUNTAIN PEAK in INDIA, radiating the Sun-rise-Rays, like Pyramid Slopes, which may have been similarly suggested to Egyptians observing Sun-rise impacts on peaks across the Nile (see Plate "J").



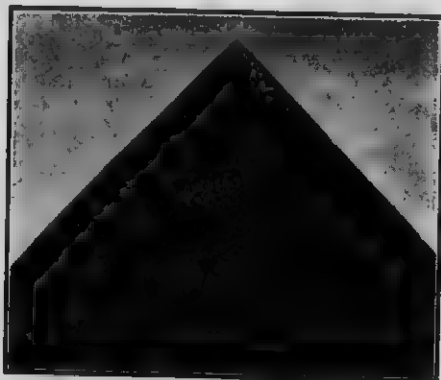
II. Pigeon House being built by an Egyptian farmer by using walls as inclined-planes to higher levels, because neither scaffold-poles nor hoists were available, as seen by the writer in Egypt.



III. MODEL illustrating HOW the PYRAMIDS WERE BUILT by using the outer-courses of stones, graded (like the Egyptian Farmer's Inclined-planes) around the 4 side-slopes, to haul up the building stones which were finely bedded all over each of the nearly 200 receding layers, to the top flat. Upon that the Apex was finally hauled up the side-inclines which were later filled up by casing stones below the Apex and downwards, finishing at the bottom of the Incline. The outer course is much enlarged to show the practicability of the 4 or more Incline-ways up one or more sides and was of very easy grade around the immense slopes of the Pyramid, as indicated across the Pyramid's Slope photo on End-Plate A.



IV. The "STEP-PYRAMID" at SAKKARAH, typical of the 2nd Stage of Pyramid Building, following Medium (Front-plate "H") and resembling the Babylonian "Zigurate" outlined on Plate E. I have added the probable tier-slope-lines to indicate the easy Inclines for hauling stones up the north-shaded slope.



V. The APEX of a PYRAMID, now in the Cairo Museum. Note the emblems of the Sun, and his "over-shadowing wings" engraved on the sloping Apex. Originally the great Pyramid had such an apex on its now flat top to point observations (see plates A and U).

(PLATE "R")—How POLAR PROGRESSION DEFLECTED the SLOPES of PYRAMIDS

THE SOUTH POLE NOT A FIXED POINT.

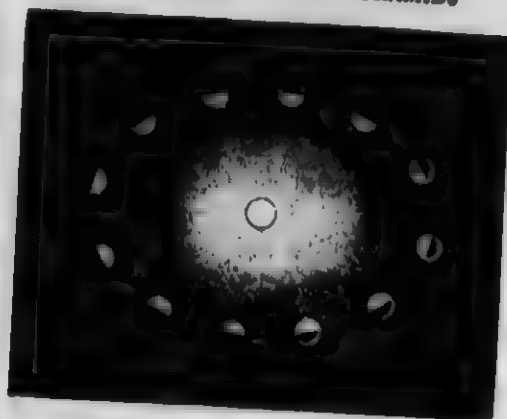


I. The PROGRESSIVE CHANGE in POLAR LOCATION is evidenced by the above Diagram derived from the world-wide observations of leading Astronomers during the years 1903 to 1910. Their tracing showing the varying curve of the extending wobble has been much enlarged to demonstrate the slowly "changing positions of the Polar axis," with consequent shifting of the Earth's Latitudes and Southward deflection of the Northern Equinoctial Slopes of Pyramids, as outlined on Plate "P."

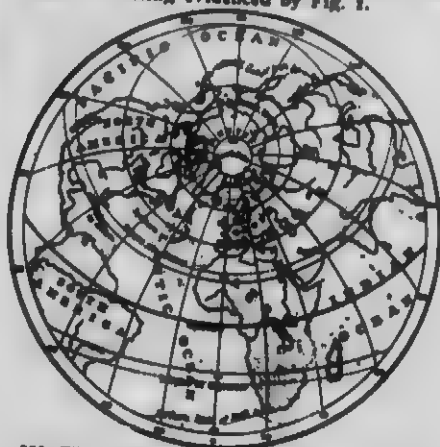
That newly discovered minor movement of the Earth appears to be mainly caused by the three gravitational deflecting forces indicated on the right, which in varying degrees seem to drag the Earth's crust around its viscous-coated core, so that Egypt (with Europe, etc.) has during the past 6,000 years been gravitated several degrees towards the Equator. Consequently the difference between the present slope of the Pyramid (which registered the Equinoctial Elevation of the Sun when the Great Pyramid was built) and the Sun's present Altitude at the Equinoxes is enlarged both by that Southern tilt exerted on the Pyramid by the greater curvature of its lower Latitude, and the resulting increase of the Sun's Elevation, causing its noon-rays to beam over the Northern Slope about 3 weeks earlier.

That combined deflection by cutting off the Noon-Equinoctial-Shadows apparently prevented the earlier re-discovery of the effective Pyramid methods by which the Ancient Egyptians derived their Calendar, as the most valuable knowledge they could win from nature by those mighty efforts of the Pyramid builders.

IV. The stupendous weight of the Arctic Ice-cap over Greenland, Baffin's Land, etc. (sufficient to cover North America about 600 ft. thick) accentuates and deflects that tilt of the Earth's crust Southwards down the Atlantic Meridian.



II. The Rotation of the Earth around its Elliptic Orbit, top-weighted by preponderance of Northern Land and Polar ice causing continuous wobbling evidenced by Fig. 1.



III. The preponderant weight of Northern Hemisphere Land dragging the Earth's crust down the African Meridian "Axis of Land-weight" towards the Equator.



AMIDS

round its
ponderance
using con-

northern
crust
Land-

ite the
pective
duction
er similar
and
from
the
enriching
of
p.

"ris-edge"
ting
and K.
Dopes.

Probable
ade of
cline when
building to
haul up the
stone-blocks

Behind the
bandamen's
net is the
Pyramid's
base line
hence the
oon-shadow
anishes
n March
n the Great
Pyramid's
ear-day.



This part,
70 feet
high, is
only about
1 1/2% of
the full
Pyramid
height of
484 feet.

Slope is
from Base
to Apex.

Men
of the
British
Navy.

around the
4 Slopes, or
signagued up
this shaded
North Side,
to the Apex.

For the foot
and casing
stones used
to wedge and
slope up
the tiers, see
Mid-Section
Plate 2 with
Shadow-rods.

(Plate "S") SHOWING barely 3 PER CENT. of the GREAT PYRAMID'S immense: WIDTH of 700 FEET. The British Navy Bandamen are standing upon the vast "Shadow-floor," which is only laid on the North side. Behind their feet is the now rugged but originally finely finished "Foot-line" of the Pyramid, across which the Egyptian year-ending Shadow fitted at noon on the day the Sun concurrently crossed the Equator and the Pyramid's Meridian at the March Equinox, marking that now world-wide central point of Astronomy, "The First Point of Aries," the Pyramid system originated by locating its position in the Star-sphere, pointed by the Pyramid's Apex that mid-night. That secret Calendar system of exclusive advantages was more essential to ensure yearly food to the Egyptians than the British Navy is to safeguard the conveyance of food to the British Empire. The Priest-guided Rulers of Egypt zealously secreted knowledge of their shadow-code, as British Admirals secrete their vital code of signals.

(Plate "T"). Apparent SEASONAL COURSES of the SUN and FIXED STARS across the Egyptian sky, on the SEASON-DIVIDING-DAYS, as PLANED OFF by the GREAT PYRAMID'S NORTH SLOPE, to enable Ancient Pyramid Astronomers to LOCATE the YEARLY RECURRING SEASONS for all Agricultural and National Calendar Purposes.

The Outer-Edges of the respective W. E. and S. PANS indicate the 15 degrees-per-hour sky-tracks of the Sun during the days, and of the Fixed Stars during the nights of those critical Season-dividing-days, when rising up to and lowering from the Pyramid's Apex, as viewed from the fixed point of observation, indicated by the respective Swords-of-light, which also serve to denote by the slope and degrees above them, the Altitudes of the Sun when viewed from the East, crossing the South Meridian (mid-line) at noon on those Season-locating-days.



W. indicates the Sun's lowest Noon Elevation as 27 degrees on the "Shortest Day" (Dec. 22nd) denoting MID-WINTER.



E. indicates the Mid-way Altitude of the Mid-day Sun as 60 degrees, when crossing the Celestial Equator on March 21st and September 23rd, when the lengths of "Day and Night are Equal"—denoting the EQUINOXES.



S. indicates the Sun's highest Noon-Elevation as 83 degrees, on the "Longest Day" (June 21st), denoting MID-SUMMER.

Lack of funds has necessitated use of the same plane-sector on which the Stars first shown above the Apex for Dec. 22nd, "The Shortest Day," are repeated in higher Elevations, for both the "Equinoxes" and "Longest Day," whereas their Sky-wide-circle by turning daily westwards one degree would revolve those Midnight Stars down to the Western horizon by March 21st, and around the Antipodes by June 21st, and thence towards the Egyptian East horizon by midnight of Sept. 23rd, as depicted on the next page, by the 4 ends of the center-crossed lines which separate the 4 Seasons, as Quarters of our Calendar Year.

This Zodiacal Star Map of the Year shows by the tilt of the cross diameters that the "Quarters" of our Year lag 9 days behind Nature's seasons.



(Plate "U.") MAP of FIXED STARS in the 12 Zodiacal Constellations adjoining the CELESTIAL TROPICS amidst which the Sun's elliptic "Path along its Ecciptic Course" is approximately indicated' the bold white — — — cycle representing the Sun's apparent annual progress at the rate of one-degree-per-day; caused by the Earth's yearly revolution around the Sun, as per Plate "R," Fig. 3. The cross-lines divide the year into quarters as nature's seasons.

That Calendar-locating-track was necessarily first traced out by the highest cult of Pyramid Priests using the 34 acres smooth-finished North Slope as a "sighting-plane," and the 484-feet-high Apex as the highest possible pointer, in the manner exemplified on the 3 Fan-like Illustrations on Plate "T." Their South-meridian line cutting 90 degrees, located the constant point of Star observation, and also registered their hourly progress and mid-day positions of the Sun along its Ecciptic Path, for each day in the year, between the Great Pyramid's "New-year's-days," when the noon-shadow annually disappeared as the Sun crossed the Equator during the Spring Equinox at the original "First point of Aries" when Star Astronomy was first elucidated by Pyramid observers.

The prominence given to the "Sacred Bull" by both the Egyptian and Assyrian Priests who controlled Calendars, indicates the probability that the Equinox then occurred in the sign "Taurus."

They needed the stupendous height of the Apex-point to locate each of the precise 365 day cog-points around the yearly wheel of Time to Calendar the Seasons, which our National Astronomers conversely locate through the magnifying powers of telescopes recently invented to discern beyond the complete cycle of the Stars each 24 hours (caused by the Earth's rotation on its axis) the daily progress points among the Zodiacal Stars, as they respectively cross the Meridian 4 minutes earlier each night.

That expedited 4 minutes turn is caused by the orbital motion of the Earth around the Sun, at nearly 1° per day, developing the observed extra "annual" cycle of the stars, as their 366th turn, which thus day-graded, forms the basis of our Calendars, ancients naturally described as "annus," a ring.

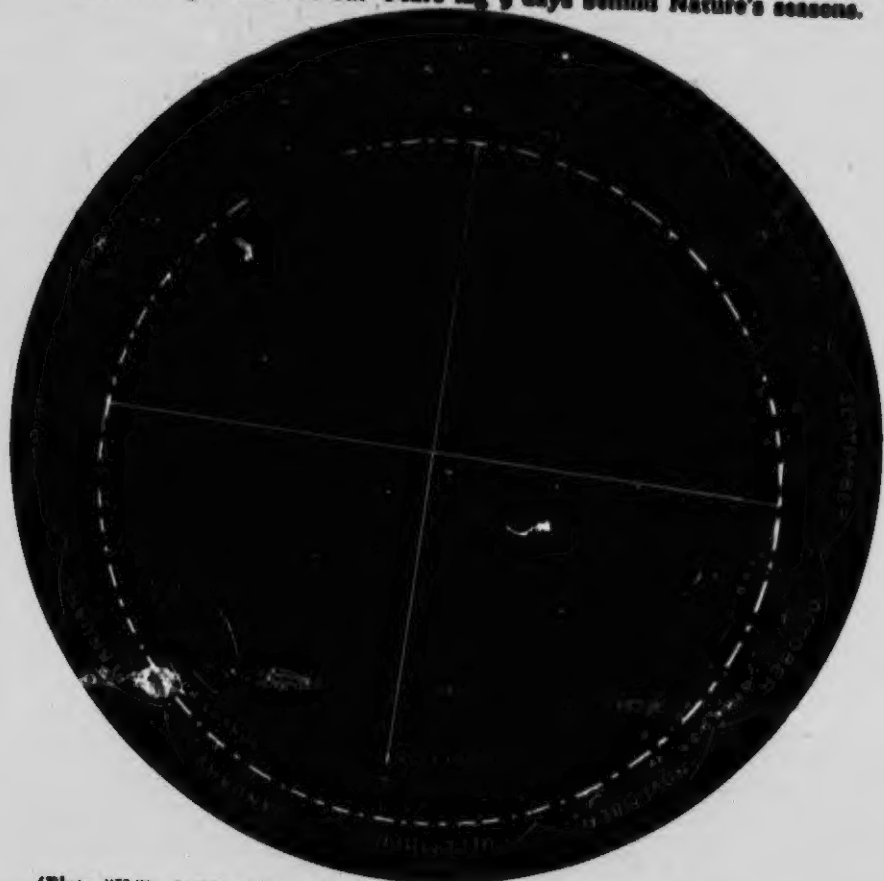
While the Sun, at elevations varying daily, crossed the Meridian located by the Pyramid's Apex at noon,

the entire cycle of 12 constellations of Zodiacal Stars not only appeared to revolve each 24 hours, but further skewed about one degree (day-register) more Westwards each night. Therefore the Star passing the Apex at mid-night on March 20th would next mid-night appear one degree to the West, whilst the Apex pointed to the March 21st space denoting the mid-night point beginning the Pyramid-controlled New Year—and so forth, moving all around one daily-cog more each day, incessantly throughout all years.

If readers will regard the bold white dot-and-dash-circle as approximating the apparent yearly path of the Noon-Sun within the star-sphere and imagine that revolving circle ticked off one of the 365 day cogs each night as the Zodiacal Stars during the respective 12 months pass over the Apex of the Pyramid as the Meridian register, they may easily see how the Egyptians were enabled to trace out the star-signs of the Zodiac and their Calendar shown on Front-plate "B." The lower Fan on the left indicates how the daily westward turn of that yearly cycle could be measured (like the day-cogs shown on page 28 for the complete sky-circle) as each day's degree passed the Pyramid's fine-pointed Apex which surmounted the now blunted top depicted on Front-plate "A."

The 12 Egyptian months of 30 days each (subdivided into 3 periods of 10 days each the crescents indicate) were thus assigned to their 12 respective 30° arcs of visible star-spaces, and grouped into the fantastic "Signs of the Zodiac" which have since enabled all nations to use the now world-wide system of Star Astronomy that the Egyptians developed. But that was long after the greatest of human efforts in Pyramid building had won them the national advantage of increased crops assured, by locating the Seasons they registered by Pyramid-shadows, and thereby discovered that needed key to Star Astronomy—the precise length and exact subdivisions of the year.

This Zodiacal Star Map of the Year shows by the tilt of the cross diameters that the "Quarters" of our Years lag 9 days behind Nature's seasons.



(Plate "U.") MAP of FIXED STARS in the 12 Zodiacal Constellations adjoining the CELESTIAL TROPICS amidst which the Sun's elliptic "Path" along its "Roll" is indicated.

Plate "W"—The 13th Month is Already Used by about 60% of Humanity, every 3rd Year
JEWISH CALENDAR (A.D. 1900, A.M. 5660-1).
N.B.—The additional or 13th month Ve-adar comes in this year to adjust the Calendar to the Seasons—see the 13 moons recorded.

1900.	5660.	Fixed Dates, Months.
Jan. 1. New Moon ...	Shebat ...	1 3
" 31. New Moon ...	Adar ...	1 2
Feb. 13. (Usual date of Purim) ...		3
Mar. 2. New Moon ...	Ve-adar ...	2 2
" 14. Fast of Esther ...		13
" 15. Purim ...		14
" 16. Shusan Purim ...		15
" 31. New Moon ...	Nissan ...	1 4
Apr. 14. Festival of Passover ...		15
" 15. " " 2nd day ...		16
" 30. " " 7th day ...		21
" 31. " " ends ...		22
" 30. New Moon ...	Iyar ...	2 5
May 17. Festival, 33rd day of Omer ...		18
" 29. New Moon ...	Sivan ...	1 6
June 3. Festival of Weeks (Pentecost) ...		6
" 4. " " 2nd day ...		7
" 28. New Moon ...	Tamuz ...	7 7
July 13. Feast of Tamuz ...		28
" 27. New Moon ...	Ab ...	1 8
Aug. 5. Fast, Destruction of the Temple ...		10
" 26. New Moon ...	Elul ...	1 9
Sep. 24. NEW MOON, 1st day of NEW YEAR, 5661 ...	Tishri ...	1 10
" 25. 2nd " " ...		2
" 26. Fast of Guedaliah ...		3
Oct. 3. Fast of Expiation ...		10
" 8. Feast of Tabernacles ...		15
" 9. " " 2nd day ...		16
" 14. Hosana Raba ...		21
" 15. Feast of the 8th day ...		22
" 16. Rejoicing of the Law ...		23
" 24. New Moon ...	Heshvan ...	1 11
Nov. 23. New Moon ...	Kislev ...	1 12
Dec. 17. Dedication of the Temple ...		25
" 23. New Moon ...	Tebet ...	1 13

The Fast of the Siege of Jerusalem folded over our New Year's Day in 1901 ...
 Although the moon-governed months fluctuate, their Festivals are held on fixed dates in the months, except the odd extra dates (shown by italics) in embolismic years.
 Note.—All the Jewish Sabbaths, Festivals, and Fasts commence the previous Evening at Sunset, so that the New Moons, sometimes are counted as falling a day later than upon our Calendar, e.g., our New Moon of March 1st falls upon their equivalent of March 2nd, which begins the Jewish inter-calated 13th month, Ve-adar.



III. The ancient Mexican astronomical cycle of 52 years, quartered into four periods of 13 years, each year having 18 equal months of 4 weeks. Pages 39-42 show Calendar and 18 months' cycle.

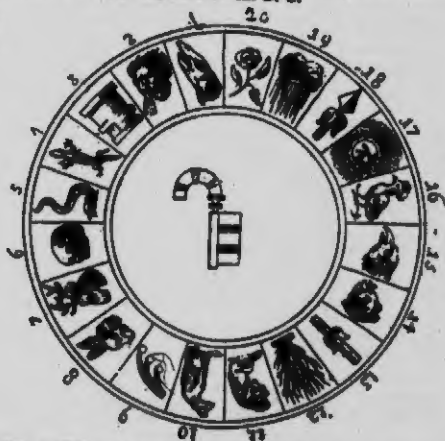
That Aztec Calendar, of 4 weeks per month, was the simplest and best of the numerous systems past generations evolved. But this generation could hardly adopt the week of 5 days. I wish it could. Then the Egyptian 12 months of 30 days divided into 6 Mexican weeks, with the 73rd week appended as the last 5 days of the year, would be the most perfect Calendar; and do more to abolish unemployment than any other government measure. Sufficient evidence is recorded in this booklet to show that our Calendars were jumbled by the Caesars, are imperfect, and can easily be made more convenient for universal use. All Great Nations have desired to gain Equal Months of 4 Complete Weeks. The years 1917 or 1918 offer the best opportunities to unitedly win that boon for all mankind.

II. The CHINESE CALENDAR showing the 13th MONTH inserted between January and February, 1903. But in 1911 their 13th month was inserted between June and July, where this proposed Reform would permanently locate it. Although the CHRISTIAN (Gregorian) CALENDAR, which was partially regulated by the above, is used by about one-third of the World's population, and is extending in use, whilst others are slowly falling into disuse, several Asiatic Calendars still serve to remind readers of the dwindling application of other Eastern Calendars with their confusing Eras.

THE CHINESE LUNAR RECKONING. (a) As still used by about 500,000,000 persons.

Our 1903.	Chinese Year 4600	had 13 months.
July 24 ...	7th month 1st day 29th year (b)	
August 23 ...	8th " 1st " 29th "	
September 22 ...	9th " 1st " 29th "	
October 22 ...	10th " 1st " 29th "	
November 20 ...	11th " 1st " 29th "	
December 19 ...	12th " 1st " 29th "	
January 17 ...	13th " 1st " 29th "	
Our 1904.	Chinese Year 4601.	
February 16 ...	1st " 1st " 30th "	
March 17 ...	2nd " 1st " 30th "	
April 15 ...	3rd " 1st " 30th "	
May 15 ...	4th " 1st " 30th "	
June 13 ...	5th " 1st " 30th "	
July 13 ...	6th " 1st " 30th "	
August 11 ...	7th " 1st " 30th "	
September 8 ...	8th " 1st " 30th "	
October 8 ...	9th " 1st " 30th "	
November 7 ...	10th " 1st " 30th "	
December 6 ...	11th " 1st " 30th "	

1905.
 January 5 ... 12th 1st " 30th "
 (a) Computed by Jas. C. Macdonald, F.S.A. (Scot.) per the "Chronologies and Calendars" (Wm. Andrews & Co.).
 Chinese celebrate their New Year's Festival on 2 consecutive days, the former of which would be the proposed International Holiday, "Skip-day."
 The above is of special interest from its conservative continuance (almost perpetuation) of the original lunation (month), which seems to have been the only possible "time-basis" the earliest men could reckon by, as already explained.—M. B. C.



IV. MEXICAN ancient MONTH of 30 DAYS, always quartered into four "hand-counts" or weeks of 5 days, fitting all their 12 months, which with a final 5 days' festival completed their year.

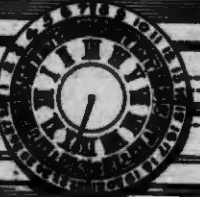
INDEX

- Abacus, 4.
 Abuse of Calendars, 4, 14, 15, 29, 52, 86.
 Academic Method, 78.
 Ages of Early Men, 1, 6, 8, 9, 10.
 Almanak, Definition, 70. (See Clog-Almanak.)
 American (Ancient) Calendars, 5, 6, 38 to 42, 45 to 48.
 American Indian Calendar, 5, 6, 45 to 48, K.
 Americans to Win, 88, 96 to 101.
 Amplitude Method, C, D, E, F, J, 10 to 13, 21, 22, 23.
 Armillary Sphere, 22.
 Arris-ridges, A.
 Augustus Caesar, 52 to 55, 57.
 Aztecs (see Mexican).
 Babel, Tower of, E.
 Babylonian Towers, etc., E, H.
 Begg, F. Faithful, 93.
 Bible Ages of Men, 8, 9, 10.
 British Calendar, 92, 96, 102, M.
 Calendar to Transpose Dates, 76.
 Calendars, A, B, J, Ja, 28, 38, 42 to 56, 62, 65, 70, 74, 76.
 Canada Advocates, 95 to 100.
 Canada's Governor-General, 96 to 100.
 Canon-Legrand, M. Louis, 88, 93, 94.
 Chaldean Temples, E.
 Changes Agreed Upon, 76.
 Chambers of Commerce (see International).
 Changing Climate, 23, 24, 25, R.
 Chinese—Abacus and Calendar, 4, 38, 64, 70, 74, W.
 Christmas, 57, 61, 70, 71.
 Churches will Benefit, 58, 88, 94.
 Churches, Years of, 43, 44, 49, 57.
 Clocks and Watches, 55, 65.
 Clocks (Water), 29.
 Cole, J. F., 101.
 Clog Almanaks, 43.
 Colliery Companies, 75, 81.
 Confusion Now Caused, 92.
 Constantine-the-Great, 54, 55.
 Cotaworth, M. B., *Editor's Note*, 1, 5, 17, 23, 25, 45, 64, 65, 72, 96, 98, 102, 104.
 Cross, Pre-Christian, 30.
 Cross-staff, L.
 Days Changing Names, 54, 62, 81.
 Degree, Probable Origin, E.
 Deluge, Probable Origin of, 9.
 Desborough, Lord, 92.
 Direct Calculator "O," 99, 104.
 Druids, Calendar Methods, E, F, 10, 11, 21, 22, 23.
 Easter's Wanderings, 55 to 60, 75, 76, 84.
 Ecclesiastics Favor, 46, 94.
 Ecliptic, Path of, 27, 28, 29.
 Egypt, Map of, J.
 Egyptian Calendar, Ja, 29, 49 to 55, 70, 91.
 Egyptian Star List, B, 27.
 Egyptian Temple, F.
 Elevated-Stone-Circles, 21-23.
 Equal Months, B, 5, 6, 27, 29, 35, 40, 42, 55, 76, 77, 99.
 Equinoctial Slope, 16 to 19, N.
 Eratosthenes, Ja, 22, 26.
 Evolution of Calendars and Almanaks, 1, 7, 8 to 49.
 Evolution of "Year," 1, 7, 8 to 49.
 Fiji Islanders' Moon-sticks, 2.
 Five Bundles Calendar, 6.
 Fives, System, 3 to 6, 45 to 48.
 Flammarion, Camille, 72, 99.
 Fleming, Sir Sandford, 88, 96-100.
 Fundamental Principles of Civilization, 36 to 39.
 Gambling Encouraged, 81.
 Geological Evidences of Changing Climate, 23, 24, 25, R.
 German Reichstag Advocates, 92.
 Gregorian Reform, 55, 57, 88, 102.
 Gregory the XIIIth, 55 to 57, 74.
 Grosclaude, Prof., 72, 94.
 Hadley, Pres. Yale Univ., 78.
 Hesse, Don Carlos, 72, 94.
 Hindoo, Invented Zero, 4.
 Hindoo Observatory, etc., 35, 38.
 Holidays, Moon-wandered, 55 to 60, 75, 76, 81.
 Hours, 27, 31, 34.
 India (Delhi Pillars, etc.), L, Q.
 International Conference, A, 59, 62, 70, 71 to 74, 92 to 103.
 International Congress, 95 to 103.
 International Reform League, Front-cover, 73, 78, 79, 82, 84.
 Jacob's 6-month "Years," 5, 6, 9, 10, 11, 12, 13, K.
 Japanese Calendar, 38, 64, 65, 70.
 Japanese Children, 2; Torii, D.
 Japanese Temple Gateway, D.
 Jewish Calendar, W.
 Joseph Nationalized Egyptian Land by 7 Years of Plenty and 7 of Famine, 14, 15, 29.
 Julian Calendar, 49 to 53, 57, 61.
 Julius Caesar, 29, 49 to 53, 57, 86, 87.
 Lat of Asoka, G.
 Leap-day, 43, 54, 62, 75, 80.
 Leap-years, 4, 17, 19.
 Maypoles, 44.
 Meridian Line, G, 17, 19, 22.
 Methods to Simplify Months, 77.
 Metonic Cycle, 37, 92.
 Mexican (Aztec) Counts, 1, 4.
 Mexican Calendar, 38 to 42, 94, W.; 52 Years' Cycle, etc., 41.
 Mid-night Sun, 29.
 Money, Circulation Retarded, 63.
 Months Changing Day-names, 62.
 Months, Methods to Simplify, 77.
 Months, Unequal, 62, 63, 70, 75-78.
 Months With 5 Week-ends, 62.
 Moon-sticks, 2.
 Moon-tallies and Counts, 1, 2.
 New Year's Day, 57, 61, 70, 78.
 Nile, Delta of, J.
 Nile, Inundation of, 9, 49.
 Noah's "5-month" Years, 5, 6, 9.
 Notched-sticks, 2.
 Numa, 49.
 Nuttall, Mrs. Zelia, 36 to 39.
 Obelisks, G, 18, 35, M.
 "Odd-day," 54, 75.
 Olympiads, 4, 87.
 Origin of Proposals, 64, 101.
 Panama, Conference at, 74, 84.
 Papal Authorities, 84, 85, 88, 94.
 Pastoral Era, 9.
 Pay-days Deferred, 63, 78.
 Pharaoh, 20.
 Philip, Alexander, 72, 91.
 Polar-Ice-Cap Moving, 23-25, R.
 Polar Sky-clock, 30.
 Polar Stars, 30 to 43.
 Poles, Probable Origin of N., 22.
 Pontiffs, Pre-Christian, 4, 15, 52, 86, 87.
 Psalms, Relays of, 58.
 Pyramid Emblem, H.
 Pyramid, Great, A, H, J, 15, 16, 17, 18, 19, 23, 24, 26, 27, 28, 29.
 Pyramid Method, H, O to U, 7.
 Pyramid, Slope Changing, 24, F.
 Pyramids, Mexican, 40, 41.
 Quarter-years (see Year's).
 Railway Co's Affected, 75, 81.
 Rational Almanak, 1, 12, 99, 101.
 Reasons for Reform, 75.
 Red-Indian Calendar, 5, 6, 45.
 Reform Easy, 65, 103.
 Robertson, Jno. C., 72, 94.
 Roman Calendar, 4, 49 to 56.
 Royal Society, Canada, 96 to 100.
 Russian Calendar, 74, 102.
 Sabbath (see Sunday).
 Salaries, 63, 90.
 Sarawak Almanak-makers, 26.
 Sarcee Indian Calendar, 5, 6, 45.
 Scores, 4.
 Seasons, Ja, 20, 32 to 44.
 Shadow-method, 16, 17, 18, 19, 26, 40, 49, M to P.
 Sheep-breeding Half-yearly, 10.
 Shinto Temple, D.
 Shortest-day (see Yuletide).
 Six-month "Years," 5, 6, 9, 45.
 Skip-day, 60 to 62, 71, 80, 84.
 Smith, Asa, Star Charts, 31 to 33.
 "Sol," A, 30, 51, 76, 77, 80.
 Sosigenes, 50 to 55.
 Sothic Period, 15.
 Sphinx, A, C, J, 16, 17, 27.
 Standard-time, 82, 96, 100.
 Star Astronomy, A, B, 22, 27 to 42, 49, T, U.
 Star Maps and Magnitudes, 32.
 Stock Exchange Gambling, 81.
 Stonehenge, F, 21, 22.
 Storekeepers Affected, 75, 81.
 Sunday, 60, 66 to 70.
 Sunday, International, 68, 76, 82.
 Sundials, 35, 40, L, M.
 Sun, Natural Gauge, N.
 Sun-rise Variations, C to F, 36.
 Sun-set Variations, C to F, 36.
 Swastika—Jain, 38.
 Swastika, Origin of, 36 to 39.
 Swiss Government Advocate, 94.
 Table "A," 75. Table "B," 76.
 Table "C," 77. Table "D," 80.
 Table "E," 81.
 Tables for Calculations, 89, 90.
 Tally Sticks, 2.
 Ten-month "Yes," 7, 49.
 Thirteen Not "Unlucky," 84 to 88.
 Thirteen, Number of, 4, 77, 83.
 Thirteen Months, 39 to 41, 49 to 56, 70, 71, 76, 77, 83 to 87, 90.
 Time, A, 18, 26 to 35.
 Tiches, 44.
 Triakellon, 36 to 38.
 U.S.A., Tennessee Gorge, 39.
 U.S.A., 23 Stars, etc., 85, 86, 99.
 U.S.A., President, 95, 96.
 Wages, Delayed, 63, 79, 81, 90.
 Week, Origin of, 66.
 Weeks, Proposals to Fix, 77.
 Yearal, A, 30, 62, 65, 70, 74, 75.
 Yearal, When to Begin, 71.
 Year, Egyptian, B. Year, Quarters of, 30-43, 57, 55, 77, 79, 81.
 Year, Evolution of, 1, 7, 8 to 49.
 Years, Ends Varied, 51, 57, 81.
 Yuletide, 30 to 37, 51, 57, 61, 70.
 Zero, 4.
 Zlgurata, E.
 Zodiac, A, B, 22, 27, 28, 29.

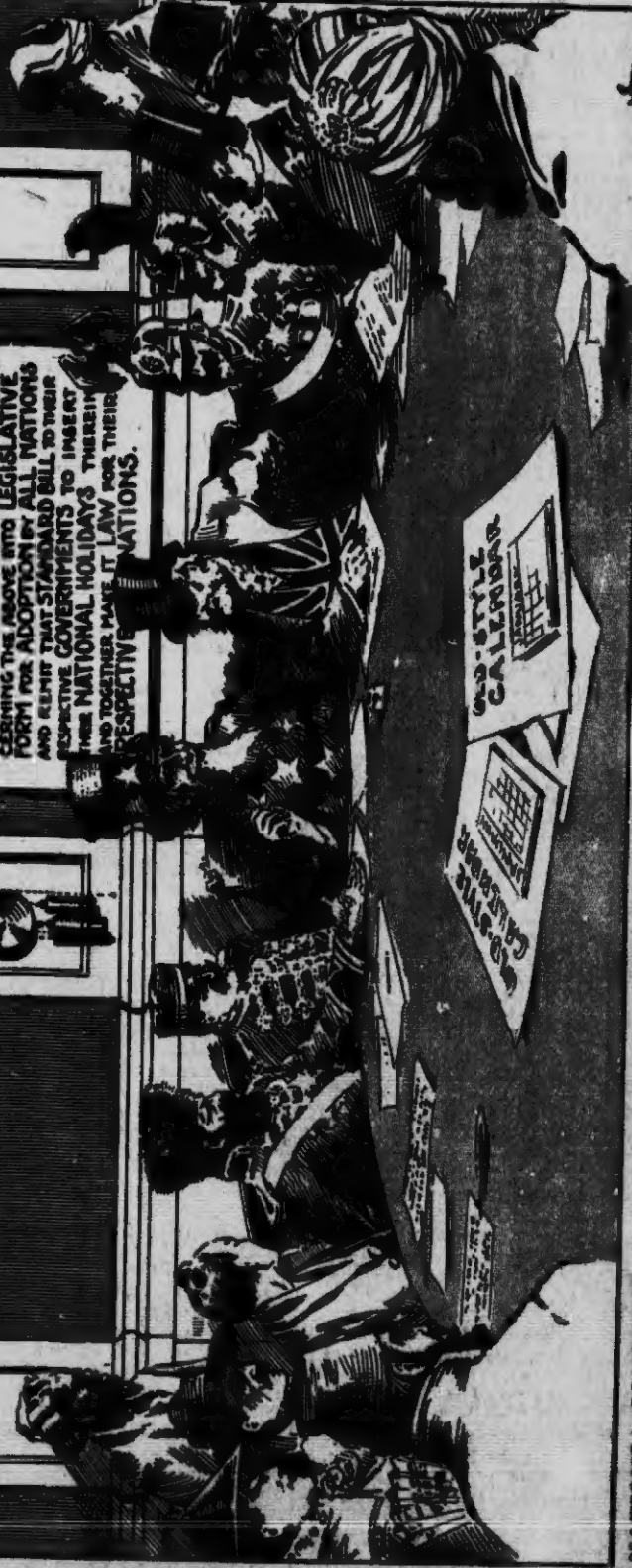
QUESTIONS TO BE CONSIDERED BY THE INTERNATIONAL CONGRESS

1. LOCATION OF THE "SKIP-DAY".
2. REMOVAL OF "LEAP-DAY" TO BE A MID-SUMMER HOLIDAY.
3. THE BEST ARRANGEMENT TO FIT 365 WEEKS INTO PERMANENT MONTHS.
4. NAME FOR THE NEW MONTH.
5. THE BEST PERMANENT DATE FOR EASTER.
6. THE BEST DATE TO BEGIN THE "YEAR-AL".
7. DRAFT JOINT RECOMMENDATIONS CONCERNING THE ABOVE INTO LEGISLATIVE FORM FOR ADOPTION BY ALL NATIONS AND REPEAL THAT STANDARD BILL TO THEIR RESPECTIVE GOVERNMENTS TO INSERT THESE NATIONAL HOLIDAYS THEREIN AND TOGETHER MAKE IT LAW FOR THEIR RESPECTIVE NATIONS.

NEW
CALENDAR
CLOCK



YEAR-AL		STANDARD MONTH							SOL	
		JAN	FEB	MAR	APR	MAY	JUNE	JULY		
		1	2	3	4	5	6	7		
		8	9	10	11	12	13	14		
		15	16	17	18	19	20	21		
		22	23	24	25	26	27	28		
		29	30	31	32	33	34	35		



NATIONS in CONGRESS will consider the above, to REPLACE MANY imperfect, CHANGING CALENDARS, by ONE FIXED "YEARAL".